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ABSTRACT

This document summarizes the rapidly growing body of knowledge about initiation of drug use and about how to stop it, especially for youth from high-risk environments. Sections 1 outlines the nature of alcohol and other drug (AOD) problems in the United States today, focusing on young people and the vulnerable years for starting AOD use, ages 12 through 20. Section 2 defines the AOD epidemic, looking at the size and character, trends, and consequences of the epidemic. Section 3 reviews the current state of knowledge about how to prevent AOD problems, examining what has been tried in targeted prevention programs, large-scale prevention programs, and individualized prevention efforts, and determining what works. Section 4 explores the evolving understanding of youths in high-risk environments. Risk factors are considered in the areas of genetics and the family, peer relations, psychological characteristics, biological influences, and community factors. Sections 5 and 6 analyze available prevention programs and describe the next steps in the nation's efforts to prevent AOD use by youths and thus to prevent AOD problems before they begin. References, figures, and tables are included. Draft checklists and a "Risk Check for Your Child" checklist are appended. (NB)

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OSAP Prevention
Monograph-1

STOPPING ALCOHOL AND OTHER DRUG USE BEFORE IT STARTS: THE FUTURE OF PREVENTION

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OSAP Prevention Monograph–1

STOPPING ALCOHOL AND OTHER DRUG USE BEFORE IT STARTS: THE FUTURE OF PREVENTION

A Report by the Committee on the Future of Alcohol
and Other Drug Use Prevention
of the Institute for Behavior and Health, Inc.

Sponsors
Office for Substance Abuse Prevention
The Institute for Behavior and Health, Inc.

Editor
Robert L. DuPont, M.D.

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OSAP Prevention Monographs are prepared by the divisions of the Office for Substance Abuse Prevention (OSAP) and published by its Division of Communication Programs. The primary objective of the series is to facilitate the transfer of prevention and intervention technology between and among researchers, administrators, policymakers, educators, and providers in the public and private sectors. The content of state-of-the-art conferences, reviews of innovative or exemplary programming models, and review of evaluative studies are important elements of OSAP's information dissemination mission.

This publication is a report by the Committee on the Future of Alcohol and Other Drug Use Prevention of the Institute for Behavior and Health, Inc.

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Summary

A major change in alcohol and other drug (AOD) use has occurred in the past 20 years in the United States. Parents and communities have been increasingly concerned about youths' use of AODs, especially of marijuana and cocaine. Because AOD use is often long lasting, many young people carry AOD problems from the homes of their parents to their own homes and families and from their schools to their places of work. The crisis in AOD use is clarified by epidemiological studies that examine rates of use, determine the multiple factors involved in the shaping of AOD use, and suggest strategies to reduce use. The realization that AOD use by teenagers is a serious problem for the United States has stimulated a need to develop prevention initiatives for adolescents and preadolescents. Efforts to prevent AOD use can be divided into three broad categories: programs targeted specifically to the needs of particular groups of young people, large-scale approaches focusing broadly on youths in a given school or community, and individualized approaches by parents and other persons directly involved with individual teenagers. Prevention research is now focusing on programs of the first type, with much of that attention directed to cigarette smoking as both a health risk and a "gateway" drug.

Recent studies indicate that some youths are far more vulnerable to AOD problems than others. Preventing AOD problems among these youths in high-risk environments is the special concern of this report. Earlier prevention programs generally focused on all young people or, even more broadly, on whole communities. In the current era of limited resources, it is especially important to develop targeted prevention efforts that reach the youths in the highest risk environments, using the specific interventions most likely to produce positive outcomes.

Risk factors for AOD problems are of five broad types: family, peer, psychological, biological, and community. The factors comprising each of these categories not only describe the influences that propel the youngster along a path toward AOD problems but also help to define prevention efforts to divert the youngster from that path. Essential to any such prevention effort is the capacity to identify vulnerable youngsters and the availability of programs and techniques to work with youngsters and concerned adults to reduce high-risk behavior. Important progress is now being made in achieving the goals of identification and intervention.

There is, however, a need to make these preliminary findings more widely known. This report calls for research that will advance ways to identify youngsters at high risk for AOD problems. The different stages of child and adolescent development should be addressed and care should be taken to avoid giving negative labels to such youngsters. At the same time, work must progress in the development and testing of prevention models designed to intervene with youths in high-risk environments, with their families, and with school personnel

to encourage behaviors that motivate youngsters to reject AOD use and derive satisfaction from AOD-free accomplishments.

Even as the United States is becoming increasingly aware of the seriousness of its AOD problems and resolved to take strong action to end them, there is a widespread, and perhaps a growing, sense of demoralization about the effort to prevent AOD problems. For much of the past 20 years, the Nation's effort to stem the tide of AOD problems has focused largely on reducing the supply of illicit drugs through the criminal law. The difficulty of eliminating an illegal market in products for which there remains an enormous demand has led to a reexamination of the national strategy to prevent AOD problems.

Although some critics of current policies have called for the legalization of drugs, others have pointed out that the best way to reduce the financial incentive for sellers of illegal drugs is to reduce the demand for these drugs. Take away the user and the supplier goes out of business. This new thinking about AOD policy has led back to the essential questions of prevention that still await resolution two decades after first being raised: is prevention aimed at young people possible, and if it is, how can it be done within the constraints of law, shared social values, and available resources? The new research explored in this report offers hope that by focusing more narrowly on youngsters before they begin use, and even more narrowly on youngsters in high-risk environments for AOD difficulties, it should be possible to move toward achieving the long-denied dream of effective prevention of AOD problems.

Sections 1 to 4 of this report outline the nature of AOD problems in the United States today, define the AOD epidemic, review the current state of knowledge about how to prevent AOD problems, and explore the rapidly evolving understanding of youths in highly risky environments. Sections 5 and 6 are the most innovative. These sections analyze available prevention programs and describe the next steps in the Nation's efforts to prevent AOD use by youths and thus to prevent AOD problems before they begin. To achieve these objectives will require a commitment of both resources and creativity on the part of the public and private funding agencies. Substantial success in the achievement of these important new objectives is within our reach.

Preface

With the publication of this monograph the Office for Substance Abuse Prevention (OSAP) takes another step toward its goal of providing national leadership in the growing effort to stop AOD problems before they begin.

Problems associated with AOD use are not new in the United States, but until the early 1970s, Federal efforts to solve these problems rested almost exclusively with law enforcement efforts to curb the supply of drugs and, during the period of national prohibition from 1919 to 1932, the supply of alcohol. With the creation of the National Institute on Alcohol Abuse and Alcoholism (NIAAA) in 1970 and the National Institute on Drug Abuse (NIDA) in 1973, new efforts were made by the Federal Government to promote research and to provide treatment for those suffering from problems caused by AODs.

In the early 1970s a new idea was born—preventing AOD problems before they occurred. These prevention efforts were designed not just to reduce the availability and supply of AODs, but to influence individuals, families, and communities in decisions about their use of these mind-altering substances. From the outset it was clear that, unlike supply reduction and treatment efforts, such primary prevention could not separate alcohol from drugs such as marijuana, cocaine, and heroin. Even the use of tobacco, a substance outside the primary mandate of both NIAAA and NIDA, was clearly linked to the use of alcohol and other drugs. Therefore, primary prevention had to deal with the entire range of drugs to which people could become addicted.

Recognizing the growing importance of primary prevention, the fact that such efforts were not easily located in either NIAAA or NIDA, and the fact that there were clearly high-risk environments that appeared to contribute to a whole range of problems, including teen pregnancy, increased homicides, low literacy, and so forth, OSAP was created in 1986. During the past 3 years, OSAP has focused on providing national leadership in identifying effective prevention programs, disseminating information, and supporting community-based prevention, especially for youth and their families from high-risk environments. OSAP has also been particularly sensitive to the needs of multicultural individuals and to other communities with special prevention needs. OSAP has been steadfast in promoting among youth a "nonuse" message about all nonmedical drugs, including alcohol and tobacco, and the illicit drugs, such as crack, cocaine, heroin, PCP, etc.

This publication is one of the first in a new series of OSAP monographs that make available the latest information on promising approaches to prevention. We do so with the expectation that providing the best new knowledge from research and demonstration efforts will promote better primary prevention programs.

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Stopping Alcohol and Other Drug Use Before It Starts: The Future of Prevention summarizes the rapidly growing body of knowledge about initiation of drug use and about how to stop it, especially for youth from high-risk environments. We are pleased to publish this report from the Institute for Behavior and Health, Inc. (IBH), edited by NIDA's first director, Robert L. DuPont, M.D. IBH assembled an outstanding and broadly representative committee to write this monograph.

We publish it, however, with a note of caution. Although it is unquestionably true that over the past two decades AOD use, especially by youth, has become a national phenomenon affecting all segments of the population in all communities, it is also true that there remain important regional, racial, and economic differences that have important implications for prevention and which require further study and examination before much can be stated about promising approaches. For example, PCP use is concentrated in the Washington, DC, area and relatively few other areas of the country. Methamphetamine ("crank") use is particularly severe in San Diego. "Crack," the smokeable form of cocaine, has had a devastating impact nationally, but it seems to have rapidly become a new "gateway" drug for the very young in inner-city poverty communities.

This report stresses common national themes for AOD prevention. It is important that we understand these broad, common concepts and thereby take the first step toward effective AOD prevention. However, we also need to recognize that along with the national impact of AOD problems, there are also important differences—not dealt with in this general report—which powerfully influence particular communities.

With this perspective, we at OSAP support this monograph as an important new step toward our goal of raising a generation of drug-free American youth.

Elaine M. Johnson, Ph.D.
Director
Office for Substance Abuse Prevention

Acknowledgments

As chairman of the Committee on the Future of AOD Use Prevention, I wish to acknowledge the generous contributions of the committee members. I also acknowledge the valuable contributions of the IBH staff. Although I edited and managed the process, the report was created and written by the committee members. It reflects the views of the Committee, which is responsible for its contents.

The report has benefited substantially from the expert advice of Elaine Johnson, Ph.D., director of OSAP; her staff, especially the staff of the Division of Communication Programs; and the staff members of the three other ADAMHA Institutes: the National Institute of Mental Health, the National Institute on Drug Abuse, and the National Institute on Alcohol Abuse and Alcoholism.

Robert L. DuPont, M.D.

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The Committee on the Future of Alcohol and Other Drug Use Prevention

Background

The Committee on the Future of Alcohol and Other Drug Use Prevention was established in fall 1987 by IBH to prepare a report that would define the problems of prevention of AOD use and propose solutions to those problems. Although programmatic approaches were considered, primary emphasis was given to the practical ways in which concerned adults (parents, teachers, community officials, and so on) could identify specific youths in high-risk environments for AOD problems and to the actions adults might take to reduce the risk of problems for these youths.

The committee was composed of professionals with a wide range of expertise in AOD problems of young people. It included experts in epidemiological, biological, and psychosocial research and in intervention programs. Committee members were drawn from areas of research, government, treatment, prevention, and law. They represented many geographic areas of the United States.

On December 4 and 5, 1987, the committee met in Rockville, Maryland, to develop a plan for the report. Subsequently, the committee worked on drafts of the report by mail. The report in its final form represents the work of the entire committee, including both the members who attended the initial planning meeting and the corresponding members who joined the process later. In its final form the report reflects the suggestions of many people who reviewed the manuscripts, which were widely distributed both inside and outside the Government over the course of more than a year.

A list of the names of committee members responsible for the contents of this report follows. Members' positions are shown for purposes of identification only. All committee members participated in this effort as individuals, not as representatives of any organization.

The entire process, including the writing of the report, was supported by a grant from The Medical Trust, one of The Pew Charitable Trusts. Without this generous and sustained support, this report could not have been written.

The final report is being published and distributed by the OSAP as part of its monograph series. OSAP's participation will ensure wide distribution of the report, thereby promoting the use of current research knowledge about prevention of AOD use and increasing the support for much-needed additional research in this vital area. All this effort rests on the conviction that young people, the

Nation's most precious resource, need more help to grow up free of the harmful effects of AOD use. This report is a public-private partnership to help achieve that shared goal.

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1. Introduction

Prevention of AOD use is a concept to which no one can object as long as it remains abstract. When the scope and details are examined and the possible solutions are reviewed, there is room for substantial controversy.

Two decades ago, when a new AOD abuse crisis in the United States became evident, the top priority, outside law enforcement, was treatment—particularly the treatment of heroin addicts. In the years since, the overriding national concern with heroin has broadened to include a wide variety of nonopiate drugs, ranging from marijuana and cocaine through PCP and LSD. A national concern with such long-available substances as alcohol and tobacco has been reawakened. Supply reduction, i.e., the effort to restrict the importation, manufacture, and sale of illicit drugs, remains vital to the task of preventing the use of drugs other than alcohol. It is now widely recognized that supply reduction alone can never be sufficient because demand for illicit drugs creates and sustains the supply of illicit drugs and makes no impact on the demand for alcohol. The importance of reducing the demand for illicit drugs—the task of prevention—has become increasingly urgent as the limits of supply reduction and the central role of alcohol use by young people have become increasingly clear.

Twenty years ago, the primary emphasis in prevention was on providing information about the dangers of AOD use to young adults and adolescents. It was assumed that people lacked adequate information about AODs and that the provision of knowledge would lead to changes in behavior. However, the inadequacy of anti-AOD campaigns involving information alone quickly became evident.

In the mid-1970s there was some enthusiasm for prevention programs using values clarification and affective education. The assumption behind these programs was that young people used AODs because they had not thought through their values or learned adequately how to express their feelings. When these approaches failed to deter AOD use, there began a period of pessimism about achieving the goal of preventing AOD problems. More ominous, there began a growing fatalism about the inevitability of AOD use by young people.

In recent years there has been a rebirth of optimism about prevention, largely sparked by a new generation of prevention programs that make use of life-skills training and peer-refusal techniques. Some successes from the information and affective programs were also incorporated. In addition, new environmental approaches, e.g., raising the minimum purchase age to 21 for alcohol, began to reduce alcohol-related fatalities among youth. Although developed initially to prevent cigarette smoking, the life-skills initiatives have been adapted more recently for the prevention of marijuana and alcohol use. At the same time these programs were being developed and researched, a new communitywide prevention approach was becoming increasingly influential as a strategy to counter teenage AOD use. That approach, emphasizing the role and responsibility of the family and the importance of clear guidelines for youthful behavior, has been incorporated in parent peer groups (parents meeting together to support prevention and intervention efforts).

A recognition of the epidemic nature of AOD use and its definition as a crisis for this Nation's youth also stimulated large-scale epidemiological studies and the development of knowledge about the nature, trends, and consequences of two decades of AOD use in the United States. These studies have permitted the assessment of the effectiveness of prevention efforts even as they have helped to identify the youths most at risk for initiating AOD use. This research has led to the development of new initiatives both for youth as a totality and for youths in specific high-risk environments.

Even as epidemiological knowledge was being developed about the AOD problem, biological study was also casting new light on use patterns of AODs and how they affect the mind and body. Vulnerability, to alcohol use in particular, is now seen as at least partly genetic; it is passed from parents to children. The search for biological markers for AOD problems has become a promising major area of research with important implications for prevention.

Together with the emphasis on prevention, increased self-awareness and concern have developed amid vulnerable populations. One of the newest and most rapidly growing types of organizations has been for adult children of alcoholics. Some are based on the Alcoholics Anonymous program and others on a variety of models. They target the needs of an estimated 28 million Americans who grew up in families disrupted by alcohol abuse. The importance of these programs is suggested, in part, by the finding that 87 percent of adult children of alcoholics received no assistance with their own feelings about alcoholism in their families (Ackerman 1987). The principles of mutual aid employed by adult children of alcoholics and similar programs, such as Alcoholics Anonymous and Narcotics Anonymous, have revolutionized the provision of treatment for alcoholism and drug abuse and, more recently, have exerted increasing influence in the area of prevention. Mutual aid has gone from being the dream of a few visionaries to becoming a national movement involving more than 1 million people all over the United States.

The Government recently has put a significant new emphasis on prevention of AOD use. Given the weight of public concern, it is unlikely that this expression of interest will abate in the near future. In the climate of acutely increased concern, however, it is particularly urgent that the Nation make effective use of the knowledge that has been gained. In that same spirit, much can be gained by focusing available resources and energies on those youngsters who are most vulnerable to AOD problems. The decision to target high-risk environments calls for answers to two questions: How can these youths be identified? What can parents, teachers, and other adults do to reduce the risk of AOD problems in the most vulnerable youths?

This report attempts to provide answers to these two questions within the limits of current knowledge and experience. Americans can capitalize now on this current knowledge and use prevention strategies to contain the epidemic of AOD problems in the United States. In the hope of achieving that goal, IBH convened a committee of national experts in prevention, which reviewed much of the current state of knowledge and wrote this report describing generally what is known and what steps can be taken. The report is not intended as all-inclusive, but it does provide some guidelines for taking action now, especially at the individual and family levels.

The report is designed to encourage action and to stimulate additional research on the central issue of preventing AOD problems.

The Focus on Young People

The most vulnerable years for starting AOD use: ages 12 to 20

AOD problems affect people at all ages, literally from conception until old age. Nevertheless, the strong connection between AOD use and youth is not coincidental. Recent epidemiological research leaves no doubt that the onset of AOD use is confined primarily to the ages of 12 to 20 and that the peak age for initiation is about 15. At the same time, however, in some inner-city environments and especially among dropouts (who are not included in most studies), AOD use may begin at even earlier ages; therefore prevention efforts must start in the elementary and preteen stages of development—especially in high-risk environments. This same body of research has demonstrated that the younger persons are when they first use a drug, including alcohol—that is, outside the context of medical treatment (e.g., methylphenidate for hyperactivity) and/or very limited family or religious rituals—the more likely they are to have AOD problems. Thus youths who first use alcohol in a peer setting at ages 12 or 13 (now a common experience) are far more likely to have problems with alcohol than youths who first use alcohol at the age of 21—the minimum age of legal drinking throughout the United States today.

National survey data also show that the peak age for use of drugs is 18 to 25, both for illegal drugs such as marijuana and cocaine and for legal drugs such as alcohol and tobacco. Thus there are two ways of describing the connection between young people and drugs: what epidemiologists call "incidence," or the age of first AOD use, and "prevalence," or the age of all people currently using drugs. The study of both incidence and prevalence reinforces the connection between young people and drugs, with first AOD use typically occurring between the ages of 12 and 20 and the most common age of all AOD users being between ages 18 and 25.

For the purposes of this report, which focuses on stopping AOD problems before they start, the primary emphasis is on incidence and therefore on young people to age 20, but the definition of youth adopted in this report extends to the age of 25.

One other perspective on age needs to be clarified. The recent drug epidemic has affected primarily Americans who were born in the 1950s, 1960s, and 1970s and are now under the age of about 40. Drugs such as alcohol and tobacco, although constituting major health problems in their own right as well as making use of other drugs more likely, nonetheless show use patterns quite different from those for illicit drugs; there is relatively little difference in use rates of tobacco and alcohol for adults of any age. On the other hand, use rates for marijuana and cocaine, the most widely used illegal drugs, are significantly lower in the over-40 age group because most of the over-40 population were in their vulnerable teenage years during a period when they were not exposed to marijuana, cocaine, and other illicit drugs.

In our emphasis on prevention, we focus primarily on Americans at risk for the initiation of AOD use, that is, youth below the age of 20. The principal focus will be on those aged 10 to 16, the ages at which AOD use attitudes and beliefs are being formed and, for many, the ages at which AOD use is initiated.

Adolescence: dependency on adults while becoming adults

The period of adolescence, and especially of early adolescence, is a time of profound and rapid change, both biological and psychosocial. One aspect of that change involves the diminution in influence of the parental family (Pascale and Streit 1972)—and of adults in general—and the increase in influence of the peer group. Adolescence marks the gradual emergence of an identity independent of adults and especially of parents. Teenagers must form independent identities even while they remain physically and emotionally dependent on the adults close to them. The adults (parents and teachers) likewise are expected to permit separation while providing essential support. The relationships between adults and youth—a principal theme of this report—need to be strong and realistic with a clear sense of purpose: to promote the young person's healthy growth into adulthood. If adolescence is seen as a free ride, as a time only for having fun without responsibility, or as a time when adult functioning is demanded in the absence of meaningful support, serious problems may result, including AOD use.

Rebellion in growing up

As part of the process of growing up and establishing an independent identity, it is common for a teenager to test and even to rebel against parental and other adult values. To the extent that rebellion involves use of AODs, there is risk of AOD problems—from dying in an alcohol-related traffic crash (the leading cause of death for 16- to 24-year-olds) to chemical dependency, including the very quick addiction to crack and cocaine. As is seen in later sections of this report, separation from key adults and from mainstream values—the absence of what has come to be called "social bonding"—is a major factor in the development of AOD problems (Hawkins et al. 1986). Adults and teenagers share the responsibility for successfully working through this period of transition from childhood to adulthood. Rebellion against adult authority and other risk-taking behaviors, although common, may take forms and/or reach an intensity that is neither necessary nor desirable. In fact, intense rebellion is often a sign of grave trouble. A desirable goal is collaboration between youths and adults to achieve appropriate separation and individuation so that youths can become healthy adults who fulfill their potential—including the potential to make constructive contributions to the lives of others in their families, to their communities, and to society.

Defining Alcohol and Other Drug Use

A phase versus a serious handicap

Epidemiological study has shown that youths (those under the age of 25) who begin using any of the substances called drugs (including tobacco and alcohol) are at increased risk for AOD use in later adolescence and adulthood (DuPont 1984; Kandel 1982; Kaplan et al. 1986; Smith 1980; Smith and Fogg 1978, 1979). Chemical use is particularly risky when it occurs in the young in a setting of support from "using" peers, is perceived to be an acceptable norm, and continues over time.

Recent research has made clear that the more frequently and the longer young persons use any AOD, the more likely they are to have a wide range of associated negative experiences from truancy and school failure to criminal behavior and suicide (Hawkins et al. 1987; Kumpfer 1987). This research does not prove that AOD use "causes" these problems. It shows that AOD use is quantitatively linked to other problem behaviors in youth. Further, the more young persons use AODs, the more likely they are to experience serious problems. However, the consequences of any use of drugs will sometimes be tragically immediate even on first or infrequent use, for example, the overdose following a miscalculation in AOD use or an automobile crash after drinking.

Alcohol and other drug use and abuse

Both in common terminology and often in the research setting, "AOD abuse" refers to drug use that is socially disapproved and/or has resulted in problems for the individual with family, school, work, or legal authority. In survey research, "use" means simply that the AOD has been ingested. This common distinction between use and abuse has some utility in research, but it engenders confusion when applied to prevention because it implies that sometimes illicit and potentially dangerous behavior, i.e., AOD use, may be acceptable and that only abuse is a problem. *In this report, all use of illegal drugs and all use of legal drugs (specifically alcohol) by persons under the legal age is defined as abuse.* Because any such use by young people can portend significant later difficulty, this report emphasizes the actions that can be taken by parents, schools, and communities to counter AOD use. When the legal status of AOD use is considered, it is important to recognize that the use of tobacco by persons under the age of 16 or 18 (depending on the jurisdiction) is illegal and that use of alcohol under the age of 21 in all parts of the United States for practical purposes is now illegal. These legal minimum ages for using legal drugs are an important expression of society's official judgment that use of these drugs by young people is unhealthy and unacceptable.

Tobacco: a special case

Several committee members believed that the inclusion of tobacco would weaken the message of the report—in part, because tobacco use does not have the immediate physiological and behavioral consequences of other drugs, including alcohol. Although it is true that tobacco use causes more health damage to Americans than the use of all other drugs combined, this damage is different from many of the problems associated with other psychoactive drugs. It involves physical impact on such organs as the heart and the lungs resulting from long-term use. Any health problem caused by tobacco use is apt to be relatively minor during adolescence. Young persons and their families have many years to contemplate the physical damage consequent to tobacco use: young persons are not likely to die young or be denied vital opportunities for growth and development because of smoking cigarettes. In contrast, AODs can cause enormous, even lethal, problems during adolescence.

Although recognizing the validity of this minority viewpoint, the majority of the committee was convinced that cigarette smoking by young people constitutes an area of major concern for the individual and for society as a whole. Like other AOD-using behavior, cigarette smoking is primarily initiated during the teenage years—90 percent of smokers begin smoking before the age of 21. Although people of any age can and do stop smoking, once use has become regular it is difficult to stop and, for many, stopping appears to be impossible. The Surgeon General recently tightened the connection between cigarettes and illegal drugs when he highlighted the addictive nature of cigarettes, emphasizing that they were as addictive as heroin or cocaine (USDHHS 1988). In addition, youths who smoke are more likely also to use AODs and should become a target audience for prevention efforts. (Johnston et al. 1987; Kandel 1982; Smith and Fogg 1978, 1979).

Prevention efforts aimed at tobacco smoking therefore are particularly important and are included as a major concern in this report. For example, among American youths aged 12 to 17, 47 percent of those who smoke tobacco cigarettes also smoke marijuana, but in the same age group only 7 percent of those who do not smoke cigarettes use marijuana. And, among high school seniors, current pack-a-day smokers are 20 times likelier to be daily marijuana users than those who never smoked. (Johnston 1985).

The gateway drugs as prevention targets

Throughout this report, the focus is on the use of four drugs by teenagers: tobacco, alcohol, marijuana, and cocaine (DuPont 1984). The first three of these have been described as "gateway" drugs because they have been the traditional entry substances used by young people. The increasing popularity of cocaine with youngsters—especially in its smokeable form, called "crack"—has led to that drug becoming a gateway drug, especially in urban poverty communities. The committee's focus on these four drugs is not meant to minimize the serious problems young people experience with many other drugs, from inhalants and hallucinogens to PCP and heroin. This focus is appropriate because most youths who use these other drugs begin AOD use with the four gateway drugs. Therefore, prevention efforts must concentrate on stopping the initiation of these four key AOD substances. At the same time it should be recognized that additional substances (e.g., inhalants and crack/cocaine) may act as gateway drugs for some groups and in some communities, especially among low-income youths.

The Goal of the Report: Helping Youngsters to Be Healthy Children and to Become Healthy and Productive Adults

Alcohol and other drug objectives

The committee took a strong and unequivocal stand against any use of AODs (including tobacco) by youth. Although it can be argued that this stand is unrealistic given the widespread use of the substances covered in this report, the committee was more impressed by the argument that the failure to state this goal clearly is tantamount to accepting behavior that is unmistakably contrary to the best interest of youths themselves, as well as to the best interests of their families and communities. Thus the committee does not distinguish between "use" and "abuse" of drug chemicals (including alcohol and tobacco) by young people, but considers all such use to be abuse, which merits vigorous, sustained prevention efforts.

The desire to prevent AOD use by youngsters is not meant to condone or accept adult use of illegal drugs or cigarettes or adult problem-causing use of alcohol. In other words, the goal of the committee is not simply to *delay* the onset of AOD use among youth, but rather to *stop* it entirely. To achieve that goal, it is vital that use of AODs be stopped among teenagers. The committee is not promoting the prohibition of moderate use of alcohol by adults, but it does believe that low-risk alcohol use should be limited to adults (e.g., people aged 21 and older).

Prevention efforts must recognize that AOD use is a process with many stages, ranging from initiation through infrequent use to heavy, frequent use. Serious prevention efforts need to be made at *all* stages of this process. Most of the report focuses on stopping initiation, because that is the first and most important defense against AOD use. It is not, however, the only defense. The committee also is concerned with youngsters who become dysfunctional from use of AODs. Concerted efforts must be made both to discourage any use of drugs by young people and to prevent or interrupt a progression in AOD-taking behavior by youngsters who have already initiated some AOD use.

Because alcohol poses a special concern, it is appropriate to examine briefly some of the issues associated with its use. One rationale sometimes given for opposing a strict prohibition against underage drinking is that young people need to learn how to drink before they leave the parental home if they are to avoid serious problems afterward. Several aspects of this argument must be addressed. First, when decisions to drink or not are made at later ages—say at age 21, the minimum legal drinking age, as opposed to age 15, the most common age for the onset of most teenage drinking—the decision is far more likely to be not to drink. Second, people who begin drinking or other AOD use at later ages are less likely to drink immoderately and/or become dependent on AODs than people who begin at younger ages (Kandel 1982; Robins and Przybeck 1985). Persons who delay the onset of drinking may differ from early initiators in ways that would make them less vulnerable to AOD use even under conditions of early initiation; nonetheless, available research findings clearly suggest the value of strategies that lead to a postponing of alcohol use in an effort to reduce the potential for later difficulty.

Finally, it should be recognized that many adult Americans drink not at all or very little. The reality is that 35 percent of American adults do not drink alcohol at all; that is, they are abstainers. An additional 55 percent of American adults take three or fewer drinks a week; that is, they are moderate drinkers. The remaining 10 percent of American adults take four or more drinks a week. This more heavily drinking 10 percent of the adult population consumes roughly 50 percent of all the alcohol consumed in the country (Malin 1986; Moore and Gerstein 1981). Most heavy drinkers socialize with people with similar drinking patterns and often do not know that their drinking patterns differ from the vast majority of the population or that for many of them those patterns constitute a risk to their health.

When thinking about adolescents learning how to drink as adults, it is important to consider just what that training will be. Are adolescents learning to be moderate or heavy drinkers? The data presented in this report suggest that the typical teenage drinking pattern bears no relationship to adult moderate drinking. Consider just one statistic: 35 percent of American high school seniors drank at least five drinks in a row at least once in the 2 weeks before the most recent High School Senior Survey (University of Michigan 1989). Can that be considered reasonable drinking or training for moderate adult drinking? What would be a model for healthy teenage drinking? Would an upper limit of three drinks a week, for example, be achievable in any significant portion of the teenage population? On the other hand, does not the acceptance of moderate but illegal teenage drinking, even when ill defined, provide a cover of apparent legitimacy for the excessive, dangerous, and out-of-control teenage drinking that is common today?

Healthy relationships with peers, adults, and the future: bonds that create and sustain family and community

Goals to prevent AOD use are defined necessarily in negative terms: that is, young people are enjoined *not* to engage in AOD use. In fact, rejecting AOD use is an active process that often relies on learning of specific refusal skills and always relies on a teenagers' own confidence in his or her ability to make decisions in the face of temptation, if not encouragement, from peers to use AODs.

To make those decisions, to declare firmly for oneself and against the AOD-using crowd, two conditions are essential. The first is the achievement of bonding between adolescents and adults who are their actual or potential allies. The most important of those adults are parents and teachers. Only through positive bonding to those adults can there be bonding to the larger society. With that bonding accomplished, a second condition can be met. With bonding to the community (including other caring adults) as a source of support, efforts can be directed toward accomplishment—toward decisions and behaviors as an adolescent that will encourage growth of the adolescent into a productive and healthy adult.

Adults, particularly parents, must mix controls with support and encourage the growth that must lead inevitably to separation. The adolescent must struggle with sudden new urges, with physical changes, with a need to separate from adults in the effort to become adult, and with a need to fit into the peer group without losing a sense of self. The potential for conflict between parent and child and the possibility of disruption to adolescent growth and development are considerable. This process has been made more complex by the lengthening in recent decades of the period from dependent childhood to independent adulthood. In this context, bonding between parent and child to achieve shared purposes becomes both more urgent and more difficult. The child alienated from the parent risks lessened parental influence and greater shaping by available peers. This shaping, in turn, can lead to greater likelihood of dysfunctional behaviors, including AOD problems (Bachman et al. 1981; Hawkins et al. 1986; Jessor and Jessor 1977; Kim 1979; Norem-Hebeisen et al. 1984).

2. The Epidemic of Alcohol and Other Drug Use

The Shape and Current State of the Alcohol and Other Drug Use Epidemic

Size and character

One of the most important achievements of AOD use research over the past two decades is the progress that has been made in studying the nature and extent of AOD-taking behaviors among those who have not dropped out of school (the dropout rate can be as high as 50 percent in some communities). Of the impressive body of epidemiological knowledge, the data most relevant to this report are from the annual High School Senior Survey conducted by the Institute for Social Research of the University of Michigan. Many of the data in this report come from the most recently released survey, conducted in 1988. However, at the time of publication of this manuscript only partial, preliminary data are available for that year. The last year for which complete data have been published is 1987. In both the text and figures of this manuscript the 1988 data are used if available. When 1987 data are used, these are the most recent data available.

In 1988 the High School Senior Survey showed that more than half (54 percent) of high school seniors had used an illicit drug at least once in their lives, 47 percent had used marijuana, and 36 percent had used an illicit drug in addition to marijuana. Twelve percent had used cocaine. Moreover, 92 percent had used alcohol, and 66 percent had smoked cigarettes (University of Michigan 1989).

These data give a useful picture of the extent of AOD use among high school seniors. The percentages of seniors who have used each of these drugs recently (i.e., at least once in the 30 days before the 1988 survey) suggest that AOD use continues: alcohol, 64 percent; cigarettes, 29 percent; marijuana, 18 percent; and cocaine, 3 percent. It is important to note that youths who were not in high school at the end of their senior year, and who therefore were not included in this survey (about 15 percent of the age group), represent a more largely disadvantaged population and have higher AOD-using rates (Annis and Watson 1975; Johnston 1973). It is likely that many of them had left school at least partly as a consequence of their AOD use.

This annual survey focuses on the extent, or prevalence, of AOD use among those who have remained in school and are in their senior year of high school. In terms of prevention of AOD use, it is vital to know when AOD use begins, that is, the incidence of AOD use. In regard to the four gateway drugs, the 1987 survey shows that 21 percent of seniors first used tobacco in the sixth grade or earlier. The percentage of students beginning cigarette smoking after the sixth grade falls in later grades to only 3 percent who first used tobacco in their senior year in high school. For the most part, high school students who become daily cigarette smokers begin smoking every day in the seventh, eighth, or ninth grades. Alcohol use shows a similar pattern of early initiation, with 56 percent first drinking alcohol by the ninth grade, the age of greatest incidence for first use of alcohol. Percentages of high school students reporting first use of alcohol fell in each grade thereafter to 6 percent in the senior year. The ninth grade was most frequently the time the students first became drunk: 20 percent of high school students reported first drunkenness in that grade (another 17 percent reporting first drunkenness before the ninth grade).

The most frequently reported time for initial marijuana use was also the ninth grade, with about 12 percent of high school students starting at that age. Cocaine, now readily available as crack throughout the country, showed a peak time of first use in the 11th grade, when about 5 percent of high school students began using that drug. Crack is a smokeable form of cocaine, which, like intravenous cocaine, is highly addictive and therefore uniquely dangerous. Crack was introduced into the United States only in the mid-1980s. The High School Senior Survey first asked about crack separately from other forms of cocaine in 1987, when 5.6 percent of the seniors reported crack use at some time in their lives and 1.5 percent reported crack use at least once in the previous 30 days. The percentage reporting lifetime use fell to 4.8 in 1988, while the percentage reporting use in the past 30 days rose slightly to 1.6 percent.

This brief review of the incidence of AOD use among high school seniors shows that the period of greatest risk for initiating use of cigarettes is in sixth and seventh grades and that the ninth grade is the time of greatest risk for beginning alcohol use, for experiencing the first loss of control associated with the use of alcohol, and for beginning marijuana smoking. These data also show that AOD use begins for many young people before the ninth grade. The most crucial time period for prevention is during the fifth through ninth grades. If these young people are to be prevented from starting to use the gateway drugs, prevention will have to begin early; for many of the most vulnerable youngsters it should probably begin by the fifth grade.

The onset of AOD use might not, in itself, be seriously disturbing if the use of AODs by teenagers could be seen as casual and transient behavior, a sort of benign rite of passage into adolescence. In fact, first AOD use by some youths does appear to be inconsequential, for many youths smoke one or two cigarettes or drink a few beers and then simply abandon those drugs. However, for many other youthful AOD users, the initial use leads to prolonged, problem-ridden AOD use. A comparison between the rates of lifetime use and recent or continuing use among high school seniors gives an indication of the short-term persistence of AOD-using behaviors is shown in table 1. These figures show 44 percent of high school students who smoked even one cigarette in their lives were using cigarettes 30 days before the survey in their senior years. By comparison, 70 percent of students using alcohol even once in their lives reported using alcohol within 30 days of the survey, and 38 percent of those who had ever used marijuana and 25 percent of those who had ever used cocaine were using those drugs within 30 days of the survey.

When the High School Senior Survey data are used to identify the percent of seniors who had used AODs once or more in their lifetimes but not in the past year, it is possible to construct "noncontinuation rates" for each AOD. These data, presented in figure 1, show that the highest rates of noncontinuation occur for the most stigmatized and feared drugs. The lowest noncontinuation rates occur for the four gateway drugs in order of acceptance in American society. Alcohol shows the lowest noncontinuation rate at 7 percent (i.e., 93 percent of 1988 high school seniors who had ever used alcohol continued to use it during their senior year). Of the four gateway drugs, cocaine shows the highest noncontinuation rate at 32 percent (i.e., 68 percent of 1987 seniors who had ever used cocaine were continuing to use it in their senior year). These four drugs with the lowest noncontinuation rates are in sharp contrast to heroin (58 percent) and PCP (57 percent), the drugs with the highest noncontinuation rates and the drugs that are the least accepted and most feared in American society. Inhalants, which include glues and aerosols, also have a high noncontinuation rate, presumably because of their status as "kids' drugs"—drugs used at very young ages by individuals who lack the ability or dollars to obtain any other intoxicating drugs.

These data are important because they suggest the high risk involved in starting AOD use, especially for the gateway drugs. The data also suggest the importance of social approval for AOD-taking behavior. The most persistent drug is alcohol—the drug that has received the greatest acceptance in our society. Use of other drugs—cigarettes, marijuana, and cocaine—is less frequently initiated and less frequently maintained because those drugs have won less acceptance in the larger society.

If youngsters use any AOD more than a few times, they are more likely to continue using it through a significant part of their lives (Kandel 1982). Most Americans are familiar with this process for alcohol and tobacco: people who use these drugs frequently as youths are likely to continue using them for many years, if not for their lifetimes. Other data show that a similar pattern exists for illicit drugs. For example, a followup of daily marijuana smokers in high school showed that 50 percent were still smoking marijuana daily 5 years later, that 35 percent were smoking marijuana regularly although not daily, and that only 15 percent had quit entirely 5 years after graduation (Johnston 1981).

These data on the maintenance of AOD use are central to any attempt to prevent first use of drugs. They support the committee's focus on grades 5 to 12, with primary emphasis on fifth to ninth grades. Our ultimate objective must be to halt recruitment to AOD use. That the achievement of that objective seems far distant should be reason to intensify our efforts. Moreover, the measurement of trends in

AOD use over time, suggests that movement now, although slow, is generally in the right direction.

Trends

The High School Senior Survey (Johnston et al. 1989) has been conducted annually since 1975. The percentage of high school seniors who had ever used any illicit AOD (including marijuana) increased from 55 percent in 1975 to a peak of 66 percent in 1982, then declined steadily to 54 percent in 1988 (see figure 2 for data through 1987). The percentage of students using some illicit AOD other than marijuana increased from 36 percent in 1975 to 45 percent in 1982, then declined to 33 percent in 1988.

Use of alcohol within the previous 30 days peaked at 72 percent in 1978, with the 1988 figure standing at 64 percent (see table 2). The corresponding figures for cigarette smoking were a peak of 39 percent in 1976 and 29 percent in 1988. Marijuana use within the preceding 30 days peaked in 1978 at 37 percent and stood at 18 percent in 1988. Cocaine use in the preceding 30 days among high school seniors peaked at 7 percent in 1985, with a sharp fall to 3 percent in 1988. Figure 3 depicts lifetime rates for each of the gateway drugs.

Several points need to be made about these national data.

- Most important for this report, the changes in rates of AOD use measured over 12 years show that the extent of AOD use in the in-school teenage population is not fixed (see table 3). AOD use increases and decreases by relatively large increments over relatively short time periods. This finding supports the goal of sharply reducing use through more effective prevention.
- The enormous extent of AOD use by American young people is unmistakable. The goal of all young people growing up free of AOD use remains elusive.
- Even the most sanguine observer of alcohol consumption by youths must be disturbed by the high levels of recent use showing that 5 percent of high school seniors report drinking alcohol daily and that 38 percent drank five or more drinks in a row (a quantitative definition of drunkenness) at least once in the 2 weeks preceding the survey.

The use of any illicit drugs among American high school seniors peaked in 1982. Use peaked for cigarettes in 1976, for alcohol and marijuana in 1978, and for cocaine in 1985. The decline in the use of these drugs does not mean that the AOD epidemic is over or that additional efforts are not needed. In fact, the most recent survey data suggest that in 1985 slightly more than 2 million Americans, mostly teenagers, were likely to start using marijuana and that only a slightly smaller number would start using cocaine (NIDA 1988).

The reasons for the modest but important downturn in many AOD categories offer important clues to prevention of AOD use. There is growing awareness of the negative health effects of AOD use, especially the negative effects of heavy or frequent use. Marijuana and cigarettes make a useful comparison to alcohol in this regard. The percentage of high school seniors who thought there was great risk from smoking one or more packages of cigarettes a day was at a low of 51 percent in 1975 and a high of 66 percent in 1986 (see figure 4). The percentage of high school seniors who thought there was great risk in trying marijuana once or twice hit an all-time low of 8 percent in 1978 before rising to 18 percent in 1987. The percentage of high school seniors who thought that smoking marijuana regularly posed a great risk to health hit a low of 35 percent in 1978 and stood at 74 percent in 1987 (see table 4). This increase in the percentage of high school seniors who said that frequent marijuana smoking posed a great risk to health was the most dramatic shift in beliefs about any drug's health effects in the last 15 years. The rise in perceived health risk from regular use of marijuana was directly translated into behavior: the percentage of high school seniors reporting daily use of marijuana peaked at 11 percent in 1978 and fell to a low of 3 percent in 1986. The linkage of attitudes toward health hazards and use rates (Bachman et al. 1988; Johnston et al. 1987) has important, and hopeful, implications for this report. These epidemiological data stand in striking contrast to the conventional wisdom that teenagers are not concerned about health risks from AOD use.

The large increases in high school seniors' perceptions of health risks from smoking marijuana and tobacco cigarettes are quite different from the experience of high school seniors' perceptions of great risk from trying one or two drinks of alcohol. This figure barely changed between 1975 and 1987, continuing to hover around 5 percent. The percentage of high school seniors who thought there was great risk from drinking five or more drinks once or twice a week hit a low of 35 percent in 1978 and a high of 43 percent in 1985. The 1987 figure was 42 percent. The perceived harmfulness of an AOD is in proportion to its rate of use in the teenage population: the higher the perceived risk to health and psychological functioning, the lower the use and vice versa. It is likely that a significant downturn in high school drinking will occur only when the risks to health and psychological functioning are seen as greater than the perceived benefits. A health-risk message that is credible in both content and source can have an important impact on youngsters' thinking and behavior.

Nonetheless, there are limits to the effectiveness of a health message alone. Health risks typically involve distant consequences. Lung cancer, emphysema, and cirrhosis, for example, are diseases of a teenager's parents' or even grandparents' generation. Academic burnout, AOD dependency, automobile crashes, and overdose can be seen as happening to other people who seem to have no willpower or sense about how to use drugs. For most youngsters, perceived health risks have to do with frequent, heavy AOD use—with uncontrolled AOD taking. Less frequent use is commonly thought to pose no real dangers. No youngsters plan at the outset of AOD use to become involved in uncontrolled AOD taking or bargain for the tragedy that can result from what they term mere experimentation.

Although 74 percent of the 1987 high school seniors perceived great risk from regular marijuana use, only 18 percent perceived great risk from trying marijuana once or twice. Trying alcohol once or twice was seen as posing a great risk by only 6 percent of seniors in 1987; even trying heroin was seen as posing a great risk by only 54 percent of these students. Most health messages about the dangers of AOD use relate to heavy, frequent use. Growing health concerns about heavy use have led to a sharp fall in the frequent use of marijuana in recent years, with a much more modest decline in rates of marijuana initiation. In the case of cocaine, there has been a very recent shift in students' perceptions of the dangers of occasional use as well, almost certainly in association with the widely publicized cocaine-related deaths of well-known athletes (L.D. Johnston, personal communications, 1988).

It is unlikely that additional health research will uncover truly convincing data about the risks of trying most drugs just once or twice, with one exception: there is a significant risk that youth who try a drug once or twice will progress to heavy, frequent use of it. This danger of progression generally has been associated with addiction to drugs, but because "addiction" has many meanings, the health message can become obscured. For example, when "addiction" was used to mean the presence of a specific withdrawal syndrome (such as occurs when heroin addicts abruptly stop taking the drug), it was thought that marijuana and cocaine were not addictive because quitting did not seem to produce such a syndrome. This belief led to lowered societal resistance to marijuana and cocaine use, which has translated directly into higher rates of use in the United States during the last two decades.

Now there is increasing recognition that people have problems controlling their use of AODs not because they have withdrawal symptoms when they quit (although this is a problem with cigarette smoking after a few months of heavy use) but because they like the drug effect. It is largely this liking, or reward, that propels youth down the path to problems including AOD dependence. Although some people find AOD use more rewarding than others, often because of biological or genetic factors, it appears that all youth who use pleasure-producing drugs are at risk of AOD dependence.

The key to using future health messages more effectively to prevent AOD initiation is to make credible this shared, human vulnerability to liking drugs that can lead to AOD dependence. This is a difficult message for many young people to accept because they feel in control of their lives. Some youths, labeled "high risk," are especially vulnerable to believing they can handle AOD use without losing control.

There is, in addition, a serious danger that the new epidemiological data on the downturn in youthful AOD use can give a false sense of confidence that health education can, in itself, prevent AOD use among youth. Three points need to be emphasized:

- The American AOD epidemic persists, with AOD use rates today at the highest level in the world.
- Health education is only part of the reason for the downturn in illicit AOD use in recent years; another important part is decreased tolerance for illicit drug use and cigarette smoking by nonusers.
- The tobacco experience gives reason for caution about the limits of even the least ambiguous health education. Despite virtually universal awareness of the deadly health risk and addictive nature of smoking, 60 million Americans still smoke tobacco cigarettes, and the rate of daily tobacco smoking among high school seniors not only remains high (just under 20 percent of the class) but has not fallen in the past 3 years.

Some who read data on AOD use may conclude simplistically that the AOD problem is small or waning or that it will simply melt away in the face of more health education. The committee believes that although these new data offer both hope and clues for better prevention efforts, they do not support the conclusion that the AOD problem of the Nation and its young people is either small or on its way to being eliminated.

Peers' tolerance for AOD-taking behaviors is a significant factor in starting and continuing AOD use. All people, especially teenagers, want to feel a part of some larger group—a family, a group of friends, a community. The behaviors that the group supports and encourages and the behaviors that the group discourages influence our views and our actions. Adolescents, perhaps more than most, seek the support of peers while they negotiate the path into adulthood. *The acceptability or unacceptability of AOD use by persons important to them is likely to be a major determinant of their thinking and behavior.* The more students disapprove of the use of any AOD, and the more they see others as disapproving of the drug's use even on an occasional basis, the less likely they are to become involved with it. Beliefs about acceptability follow as well as lead changes in AOD-using behavior.

Consequences

The consequences of the first use of an AOD may be profound, although they may appear remote to the youngster. The role of alcohol in traffic fatalities, of drugs ranging from cocaine to sedatives in overdose deaths, and of tobacco in lung cancer and emphysema are all well known. Less dramatic, but equally insidious, is the role that AOD use can play in poor performance in school (Brooks et al. 1977; Friedman 1983; Kandel 1982; Kim 1979) and in dropping out (Annis and Watson 1975). It is important to remember, however, that the relationship between AOD use and school performance is reciprocal, creating a vicious cycle of failure. Not only can AOD use result in poor performance and dropping out, but also early school failure can be a precursor for later AOD use (Holmberg 1985; Jessor and Jessor 1977; Johnston 1973; Kandel et al. 1978; Smith and Fogg 1978).

Delinquency and illicit drug use have a similarly reciprocal relationship (Hawkins et al. 1987). Just as early delinquency is associated with later AOD use (Kandel et al. 1986; Simcha-Fagan and Gersten 1986), early use of illicit drugs makes more likely an involvement in delinquent behavior (Brunswick and Boyle 1979; Kleinman 1978; O'Donnell and Clayton 1979).

High rates of AOD use also have been reported in runaway populations (Edelbrock 1980; Farber 1987; Shaffer and Caton 1984), sexually active youngsters (Jessor and Jessor 1978), and in a newly emerging category in psychiatric practice—the dually diagnosed patient who suffers both from AOD use and from significant affective or anxiety disorders (O'Donnell 1985; Robins and Przybeck 1985).

The period from adolescence to early adulthood has itself become more risky over the past 20 to 30 years. The death rate has risen for people aged 15 to 24 (the peak ages for AOD use); at the same time it has fallen steadily for all other age groups in the American population. The suicide rate alone has more than doubled from about 6 per 100,000 in 1960 to about 13 per 100,000 in 1985. A substantial number of suicides, especially by youths, are now known to occur in association with AOD use (Murphy 1988). Homicides in this age group have tripled in the period from 1950 to 1980 and have become the leading cause of death for nonwhite males aged 15 to 24; one-third of accidental deaths in the same age group occur to people who have been drinking and driving. During the 1960s, national scores on the Scholastic Aptitude Test began a long slide, finally hitting an all-time low in 1980. They have increased since that time but are still below the levels recorded two decades ago. Although generalizations are hazardous, it can be said that during the past 20 years there has been a deterioration in the health and behavior of teenagers, which has resulted in crimes, out-of-wedlock pregnancies, sexually transmitted diseases, suicides, and lowered academic performance. And, in tragic association with all of these results, there has been a large increase in drug use and no diminution in alcohol use. All of these problems reflect impulsiveness on the part of teenagers, the loss of positive bonding to adults and to social institutions such as religious settings and schools, and other factors that appear to be contributing to problems for teenagers in America.

Implications for This Report

The disturbing deterioration of many measures of adolescent health and behavior over the past two decades and the abundant evidence that all adolescent behavioral problems are linked to each other point to one of the central conclusions of this report: AOD use prevention will be promoted by the achievement of other positive goals for young people (e.g., reducing teenage suicide and improving academic performance) and the achievement of these goals, in turn, will reduce adolescent AOD use.

The linking of these problems and the reciprocal nature of their relationship to AOD use by youth is important for this report because it gives hope that success is possible (rates of AOD use can and do fall), and it suggests that a range of problems may be reduced when AOD use among youth is reduced. Thus prevention of AOD use by youth is likely to be effective in reducing other problem behaviors, and, by the same token, success in reducing other problem behaviors is likely to reduce rates of AOD use by young people.

In the search for useful models for prevention of AOD use by youth, and especially in the search for effective ways to identify and intervene with specific youths in high-risk environments, the field of AOD use has progressed from the generalized AOD education programs of only 20 years ago to the highly structured social and personal skills training approaches under study today (Botvin 1987).

3. Knowledge about Prevention of Alcohol and Other Drug Use

What Has Been Tried

Historically, prevention programs have been classified in public health terminology as providing primary, secondary, and tertiary prevention depending on the point along the AOD use continuum at which the intervention is directed (Swisher 1979). This classic public health approach is related to a wide variety of diseases from heart disease to polio. Primary AOD-use prevention activities are directed at a point before AOD use starts. An example of primary AOD use prevention is a classroom program for sixth-graders that teaches peer-refusal skills to students when they are offered a marijuana cigarette. Secondary prevention activities are directed at a point at which AOD use is seen as a threat or has been initiated, but the individual can still be seen as capable of stopping AOD use as the result of an intervention. An example of a secondary prevention program is a treatment program for 10th-graders who are identified as AOD users (e.g., because of arrest). In the AOD use field in recent years a middle ground between primary and secondary prevention has become common; "interventions," or activities that are more focused and more intensive than typical primary prevention and less intensive than secondary prevention. Tertiary prevention activities are directed at a point at which AOD use behaviors have become fixed. These efforts are aimed not at stopping AOD use but at reducing the consequences of use. An example of a tertiary AOD use prevention program is providing methadone to heroin addicts in an effort to permit individuals to modify their behaviors and to reduce the complications of their AOD addiction (such as crime, overdose deaths, and acquired immune deficiency syndrome).

Although this description of a trichotomy of effort is useful, it considers treatment as a part of prevention and thereby muddies somewhat the definition of each. Moreover, this structure is used to justify the development of prevention programs for use by community agencies and organizations and gives relatively little attention to the contributions of those persons closest to young people and most largely empowered to help them in forming attitudes, beliefs, and behaviors with regard to AOD use. Our division of prevention activities into targeted-group, large-scale, and individually focused prevention efforts emphasizes primary prevention and early intervention. In so doing, we attempt to recognize the contributions that must be made by a variety of prevention specialists, including parents, teachers, other concerned adults, and the youngsters themselves.

When the AOD use epidemic first became apparent 20 years ago, health information education was the first type of prevention approach used. The education model attempts to provide information about the harmful effects of

AODs in the context of a general AOD education effort. This approach is still at the heart of many school-based approaches to AOD problems, but health education alone is no longer seen as sufficient to the task of reducing AOD use. Systematic studies of information programs suggest that youths exposed to various AOD education programs are no less likely to use drugs in the period immediately following exposure than are control groups (Flay and Sobel 1983); in fact, they sometimes are more likely to use drugs (Swisher et al. 1971). The common interpretation of this finding is that the information alone is inadequate and, in some instances, may even pique curiosity and/or suggest to young people that their fears about particular drugs are exaggerated.

Two variants on the health information theme are included in early anti-AOD educational efforts. The first is fear arousal. The underlying assumption of these efforts is that fear will serve as an effective deterrent to AOD use. Therefore, these efforts go beyond simple information dissemination to give clear messages that AOD use is very dangerous and that youths who do not heed warnings will suffer the consequences. Today many high schools use the fear-arousal approach to discourage alcohol-impaired driving by showing horror films of alcohol-caused auto injuries and fatalities. This approach has been used recently to discourage smoking. Film clips show famous people telling how they began smoking in adolescence and now are suffering from heart and lung disease. These films typically end with a postscript announcing the individual's death.

The second variant of the health information approach is moral suasion. In this approach an appeal is made to resist AOD use on moral or religious grounds and abstinence is advocated. Although there is evidence that religious youths are less likely to use drugs and alcohol than nonreligious youths, there is little evidence that too much fear arousal or overly "preachy" messages prevent AOD use by most youths, especially youths in high-risk environments, who are often quite fearless about the future consequences of their behavior and are unlikely to be actively religious (see section 4). On the other hand, many relatively low-risk youngsters are probably discouraged from using drugs by both fear arousal and moral suasion. Indeed, recent analysis suggests that fear-arousing messages—when buttressed by credible argument—may play a major role in modifying some attitudes and behavior (Johnston 1988).

A second type of health education program used to prevent AOD use among youth teaches students about the expression of their feelings. This approach does not involve information about drugs, fear arousal, or moral suasion. In fact, drugs are seldom mentioned in these indirect efforts. This approach to prevention is called affective education or (when values are taught) values clarification. Affective education is based on the observation that many people who use drugs have difficulty identifying and expressing feelings of all kinds, including anger and love; consequently this approach teaches youngsters to recognize and express those feelings appropriately. This observation is central to many treatment programs designed to serve AOD users. The values clarification approach is based on the observation that many AOD users have a poorly developed sense of their own values and life goals. Values clarification is designed to permit youngsters a greater understanding of the values and ideals with which to shape their lives and of the life objectives available.

Both affective education and values clarification are humanistically based and pursue common goals. They do not prove effective in preventing AOD use (Hawkins et al. 1985; Schaps et al. 1983).

Targeted prevention programming

The psychosocial approach to prevent AOD use among youth in school is a more recent development. This approach defines as its target a narrow band of young people and applies to them a specific set of practices. It is more finely delineated and more extensively studied than its forerunners and is generally viewed as more successful. Psychosocial approaches are divided into two broad types. The first involves programs focusing on social influences that promote (or deter) AOD use. The second teaches coping or lifestyle skills.

The new generation of psychosocial prevention programs traces its origins to the pioneering work of Evans and his colleagues a decade ago, which focused on the social and psychological factors involved in the initiation of cigarette smoking (Evans 1976; Evans et al. 1978). This work was strongly influenced by the concept of "psychological inoculation," from persuasive communications theory, and it was modeled on the analogy to inoculation that is used in traditional preventive medicine. This approach was built on the observation that AOD use spreads from one involved person to another, much like an infectious disease. The underlying goal was to raise the resistance of young people to the pressures they experienced to use AODs. The application of this idea to smoking prevention involved training youngsters to identify the forces promoting smoking behavior and helping them to develop rejection strategies. The several types of psychosocial approaches developed are discussed in greater detail in section 5.

Large-scale prevention programming

Large-scale prevention programs use a generic approach in working with large and frequently heterogeneous populations. Often, the only characteristics that define the target population are age and locale. Thus the focus of a large-scale prevention program may be the whole population of American young people, as with national media campaigns; all the youngsters in a selected community, as with the use of major parent peer group initiatives (NIDA 1979); or all the youngsters responsible to a given agency, as with the development of school policies and/or curricula.

Large-scale prevention efforts typically attempt to change attitudes and beliefs about AOD use and about the acceptability of AOD-using behaviors. Ultimately, the goal of these efforts is to decrease community tolerance for AOD use. The means to achieve that goal may take such diverse routes as parents working with schools to effect new school policies regarding AOD use, communities developing jobs and/or recreation opportunities for adolescents, and/or communities getting rid of their "head shops." All of these measures are designed, in part, to permit the community to stiffen its resolve to make AOD use by adolescents an unacceptable behavior.

The extent of change in public awareness, attitudes, and behaviors with regard to AOD use in just the past decade is without precedent. For example, public smoking of tobacco is now often permitted only in designated areas. In both public and private surroundings, smokers feel obligated to request permission to smoke and nonsmokers feel emboldened to refuse that permission. In the mass media, alcoholism is now becoming a potentially deadly disease, not a comic prop. Responsibility for low-risk use of alcohol by adults has been extended from user to host or hostess, to friend, to parent, and even to commercial establishments serving alcohol. The High School Senior Survey has shown a steady increase in seniors' disapproval of their fellow students' use of marijuana and other illicit drugs—a change that obviously reflects the negativity of their own attitudes toward AOD use (Johnston et al. 1988).

Still other large-scale prevention programming initiatives have been carried out in communities where youngsters are at comparatively high risk for AOD use, providing skills and experience to discourage involvement with AODs. These programs have increased youngsters' academic and interpersonal skills and have provided opportunities for jobs and AOD-free recreation. Just as the bonding of youngsters to parents is essential to the development of healthy adolescents and adults, so too is the bonding of youngsters to the community. The community that offers opportunity and expresses concern is more likely to obtain the accommodation and adjustment of both the adolescent and the adult.

There are other large-scale prevention efforts that are not dealt with extensively in this report. Bonnie (1981) has argued that government has the capacity to control (and manipulate) drug availability, information about drugs, and sanctions for drug use by—

- taxing
- controlling hours for sale of alcohol
- restricting locations for sale of drugs through zoning laws or other ordinances (e.g., permitting or denying tobacco vending machines on high school grounds)
- implementing and enforcing minimum ages for tobacco and alcohol use
- regulating pro-AOD advertising and developing and disseminating its own anti-AOD or counteradvertising campaigns
- controlling the severity of sanctions for AOD use

Communitywide campaigns may combine the efforts of citizens' groups and public officials to reduce the supply of AODs in efforts ranging from development of school policies to "sweeps" of pushers and their clientele and may use information resources ranging from T-shirts to billboards, and from milk cartons to public service announcements on radio and television. These communitywide efforts are also important because they powerfully reinforce the more individualized prevention efforts explored in this report.

Individualized prevention efforts

Finally, prevention programming is evident in individual efforts to work within the family and community to provide support and structure to the lives and growth of particular young people. Parents who make more time available to their children, the Big Brothers or Big Sisters who choose to provide support that would otherwise be absent, youth-serving organizations that give guidance and direction, and youngsters who help chart paths for brothers or sisters are all engaged in efforts that can help prevent AOD use by youth.

It is difficult to assess the effectiveness of individual efforts to prevent AOD use. We know enough regarding the relation of school failure to AOD problems to say that the extra attention of a concerned teacher or the efforts of a student tutor may be profound. We know enough about the importance of bonding between parent and child and between community and youngster to say that the parents' efforts to learn about AOD use and express their concerns to their children have great likelihood for shaping later behavior. In a very real sense, in communities and in families, AOD use is prevented one child at a time.

What Works

Just as there has been a substantial increase in prevention initiatives over the past 10 to 15 years, there has been a substantial increase in the emphasis on research and on the assessment of the effectiveness of prevention programming (see table 5). That emphasis has advanced, and will continue to advance, our capacity to prevent AOD use by teenagers. However, it is important to be aware that not all programs are equally subject to rigorous assessment. Thus efforts to mobilize whole communities to prevent AOD use cannot be studied in the same way as efforts to target particular grade levels in particular schools. Nonetheless, communitywide efforts, with their emphasis on reducing the tolerance for AOD use behavior, may be as significant to prevention as any of the more tightly focused initiatives.

It is, in fact, those targeted prevention programs, with their increased capacity to make use of traditional research design, that have given some of the greatest optimism to our AOD-problem prevention activities. Typically, those approaches have been developed for use in the 5th to 10th grades by teachers, peer leaders, and/or health professionals and have emphasized the learning of peer-refusal skills and/or training in life skills. Although these programs show promise for the school environment, other approaches may be better suited for dealing with school dropouts.

Peer-refusal skills are knowledge and behaviors that allow youngsters to understand and counter the influences in their environment that encourage them to use AODs. Life skills are the knowledge and behaviors that increase youngsters' skills in coping with the developmental influences of preadolescence and adolescence. Life skills and peer-refusal skills (Flay 1985; Flay et al. 1983b; Hurd et al. 1980; C.A. Johnson et al. 1984; McAlister et al. 1980; Murray et al. 1984; Perry et al. 1983), which generally have been separated, may also be combined in a single school-based prevention program (Botvin et al. 1983, 1984; Schinke and Gilchrist 1983). As described by Flay (1985), these programs have typically employed some combination of the following information- and skills-building strategies:

- developing problem-solving and decisionmaking skills
- developing cognitive skills for resisting interpersonal and media-based prosmoking and prodrinking messages
- increasing self-awareness and self-esteem
- learning non-AOD-use skills for dealing with anxiety and stress
- enhancing interpersonal skills such as the ability to initiate a conversation
- developing assertiveness skills such as the ability to express displeasure and anger and to communicate needs
- drawing the relationship between smoking, AOD use, and health concerns

These skills are usually taught through classroom work and "homework."

The life-skills and peer-refusal skills training approaches have been reported as reducing or delaying the onset of smoking (Botvin et al. 1983, 1984; Englander-Golden et al. 1986; Evans et al. 1981; Flay 1985; Flay et al. 1983b; Hurd et al. 1980; Johnston et al. 1984; McAlister et al. 1980; Murray et al. 1984; Perry et al. 1983; Schinke and Gilchrist 1983). Additional study has suggested the utility of these strategies in dealing with other AOD use as well (Botvin et al. 1983; McAlister et al. 1980).

Flay (1985) analyzed evaluation studies of school-based programs that emphasized peer-refusal skills. He divided the 17 studies reviewed into four timeframes or generations, based, in part, on the rigor of the studies conducted. Flay concluded that "the fourth generation studies have confirmed the suggestion by second and third generation studies that the social influences approach to smoking prevention can be effective." In one such fourth-generation study, Flay reported smoking-initiation rates of 40 percent for students exposed to a skills training program, compared to 53 percent for controls. However, whereas 33 percent of students in a high-risk environment (i.e, their parents, siblings, and/or friends smoke) had initiated smoking after involvement in the program, 78 percent of controls from the same high-risk environment had done so. Botvin (1987) reported that 10 percent of students exposed to an intensive life-skills training program initiated smoking in the month before posttest, compared to 22 percent of controls. At the same time, Flay, like Botvin, cautioned that we know little about the extent to which findings based on the typically white, middle-class youths studied can be generalized to other populations or what components or combination of components are useful and under what conditions program success can be achieved.

Botvin and Wills (1985) reviewed nine evaluation studies of targeted initiatives that combined peer-refusal and life-skills training. They concluded that "all of these approaches have produced demonstrable effects for one or more substance use behaviors." They noted that methodological problems exist but reasoned that the consistency and magnitude of effects obtained argue for the support of these prevention programs. Nonetheless, concerns about methodological problems (Biglan and Ary 1985; Cook 1985) have suggested the importance of additional research in this area, although without a consensus about the specifics of appropriate research design. The data available now do not permit a confident assessment of the extent to which these results on the prevention of smoking can be duplicated by efforts to curb AOD use. It is also unclear how persistent the effects of these prevention efforts are.

Although the quality of prevention research has continued to improve throughout its relatively short history, critics of those studies can point to problems of attrition, to sometimes questionable comparability of study samples, to inconsistency in program implementation, and to inability to control for the effects of simply doing something new, which have plagued many of the studies. Others point with equal legitimacy to the consistency of findings and to the increasing rigor of study. It appears that further refinement of skills-training strategies and study of those strategies and their components are clearly warranted; however, the positive findings from various studies conducted in a number of communities indicate that skills-training initiatives have particular promise for preventing AOD use among youth. Still, the call for further study is more than the routine urging of continuing support for research. There must be another wave of study that both imposes greater methodological rigor and attempts to assess the relevance of techniques that have been developed to prevent the onset of AOD use. Without such studies, legitimate questions about the usefulness of the interventions studied thus far will remain unanswered.

Other strategies targeting specific populations of young people have been directed toward children whose behaviors or backgrounds suggest they are at heightened risk for AOD problems. Those youths may come from troubled families or may have shown early patterns of aggressive, antisocial behavior. The prevention approach used with these youngsters also has relied on training in life skills, but the behaviors taught have varied somewhat from those described in the preceding paragraphs. The range of skills taught to youngsters at risk has been broadened to include controlling impulse, managing hostility and anger, structuring leisure time, achieving in school, and coping with authority. In addition, parents and teachers have been enlisted as allies in these prevention efforts. Parent training has emphasized using communication skills, dispensing appropriate and consistent rewards and punishments, monitoring the child's behavior, and making family time available.

The research evidence to date has demonstrated that these initiatives are at least moderately effective in reducing AOD use. Family skills training with AOD-abusing parents and their children has led to improved family communication, decreases in children's behavior problems, and increases in reported intentions to reject alcohol and tobacco use (DeMarsh and Kumpfer 1986; Kumpfer and DeMarsh 1983). At the same time, Kumpfer (1987) made it clear that not all such parents can become effective role models and that other adults must sometimes be found to act in that capacity. Skills training for youngsters at risk by virtue of early aggressive behaviors also has led to reductions in antisocial behaviors (Garrett 1985; Shure and Spivack 1983; Spivack and Shure 1982).

It is more difficult to subject large-scale prevention programming to systematic study. Nonetheless, such study does exist, and it supports the importance of these approaches. Media programming has long been a popular strategy for AOD use prevention. Of necessity, that programming has often relied on delivering a single message to a large and heterogeneous audience. Such programming has proved understandably difficult to evaluate. Preliminary survey results aimed at evaluating the large-scale anti-AOD media campaigns sponsored by NIDA and OSAP, and subsequently by a partnership of the advertising and media industries, suggest that those campaigns have attained wide exposure among young people and quite favorable ratings (Johnston 1988).

In studies of media programming targeted to specific audiences and combined with community followup, significant differences in drug-using behaviors and attitudes were found between exposed groups and control groups (Flay et al. 1983b). One initiative leading to group differences involved followup in the schools to reduce smoking among junior high school students (Flay et al. 1983b). A second study successfully targeted prescription drug use by young women (Hanneman et al. 1977, 1978).

Community-based programs that have provided academic and interpersonal skills to youngsters in high-risk neighborhood environments also have produced positive results. When skills training for preschool youngsters was combined with family management training for their parents, lower rates of adolescent delinquency and teenage pregnancy resulted, and rates of school completion were higher than for other youngsters who were not exposed to this program (Berruetta-Clement et al. 1983, 1984). In a few instances, community-based prevention initiatives have emphasized an embedding of programs in the ethnic communities in which they are located (NIDA 1986; Rachin 1988). There is need for greater effort to tailor prevention initiatives to the needs of ethnic minorities and to understand the efficacy of those initiatives. In a recent literature review, Gilbert and Cervantes (1987) could locate only one study evaluating a prevention program targeted to Hispanic youth. Recent work by Gilchrist et al. (1987) established the efficacy of a behavioral skills-training model adapted to the special circumstances of Native American youths to prevent AOD use.

With respect to the third type of prevention program identified in this report, individualized prevention, there is very limited research (Bry et al. 1986). This approach is most appropriate for use by parents, teachers, and others concerned about preventing AOD use by particular teenagers. As this report has emphasized, individualized prevention is potentially the most important area of prevention activity. It deserves far more research and programmatic attention than it has received.

With regard to prevention programming, much clearly remains to be done in terms of further program development, adaptation of programs to the special needs of different populations, and evaluation. However, the past 15 years have witnessed the initiation and study of models involving training in peer-refusal skills, life skills, parent-and-child cognitive-behavioral skills, media programming, and various community intervention strategies. The glass may be fairly described as partly full and becoming fuller—this report encourages the continued and more rapid filling of that glass.

4. Identification of Youths at High Risk

Risk of AOD use can be seen as falling into five broad categories: genetic and family factors, peer factors, psychological factors, biological factors, and community factors (see table 6). As Hawkins and his colleagues (1986, 1987) have emphasized, these categories are not mutually exclusive, because risk factors in one area often interact with risk factors in another area. Nevertheless, for the sake of clarity these broad categories are addressed individually and in accord with the structure provided by Hawkins and his associates (1987).

Genetic and Family Factors

There are four general family-related risk categories.

Family history of alcoholism

There is increasing evidence that this factor is genetic and not simply a matter of experience or learning, especially for sons of fathers who had early onset of drinking problems (Begleiter et al. 1984; Bloom et al. 1982; O'Connor and Hesselbrock 1985; Porjesz and Begleiter 1985; Schuckit 1980, 1985; Schuckit et al. 1981, 1983). Twin studies, too, suggest the importance of genetic factors, particularly with regard to males (Kaij 1960; Schuckit et al. 1972; Cadoret et al. 1980; Gurling et al. 1981; Pickens and Svikis 1986).

Family history of antisocial behavior

Youngsters with parents or siblings who show antisocial behavior are at higher risk of developing AOD problems than other youngsters (McCord and McCord 1962; Robins 1966).

Inadequate parental direction and discipline

There is evidence that families with poor parenting skills have a disproportionately high risk of having children who use AODs (Baumrind 1983; Dishion et al. 1985; Kumpfer 1987; Kumpfer and DeMarsh 1986; Patterson and Dishion 1985; Penning and Barnes 1982; Robins 1980; Simcha-Fagan and Gersten 1986).

Parental alcohol and other drug use and attitudes favorable to such use

This factor is associated with a greater risk of teenage AOD use (Johnson et al. 1984; Kandel 1982; Kandel et al. 1978; Kim 1979; Thorne and DeBlassie 1985).

Peer Factors

One of the most powerful predictors of AOD use by an adolescent is the AOD-using behavior of the youth's best friend (Elliott et al. 1985; Jessor et al. 1980; Kandel 1978, 1985; Kaplan et al. 1982; Norem-Hebeisen et al. 1984; O'Donnell and Clayton 1979). This factor is seen not only in the choice of friends who use drugs but also in the stronger orientation to peers than to adults (Jessor and Jessor 1978). Thus youths who have AOD-using peers and youths who choose peers over adults are at increased risk of AOD use. Youngsters having older siblings involved with AODs are also more likely to become involved with AODs themselves (Kandel 1985).

Psychological Factors

A wide variety of individual factors are known to be associated with AOD use. These include—

- school failure (Anhalt and Klein 1976; Annis and Watson 1975; Robins 1980)
- low interest in school and adult achievement (Brooks et al. 1977; Kandel 1982; Kim 1979; Smith and Fogg 1978, 1979)
- rebelliousness and alienation (Bachman et al. 1981; Johnston 1973; Kandel 1982; Kumpfer and DeMarsh 1986; Smith and Fogg 1978; Holmberg 1985)
- early antisocial behavior (Elliott et al. 1985; Kandel et al. 1986; Kellam and Brown 1982; Robins 1980)
- early, heavy AOD use associated with continuing use (Kandel 1982; Kaplan et al. 1986; Robins and Przybeck 1985)

A constellation of character traits has been identified that is associated with high risk of AOD problems among teenagers. These characteristics include lack of empathy for the feelings of others, easy and frequent lying, favoring immediate over delayed gratification, and insensitivity to punishment. Youths with these character traits are especially vulnerable to AOD problems as well as to other problem behaviors (Smith and Fogg 1978; DuPont 1988).

This list of psychological traits suggests that youngsters at high risk for AOD problems are the least likely to be positively bonded to adults and the least likely to respond to health education messages about the possible dangers of AOD use. The data cited earlier about the large U.S. declines in illicit AOD use by youth during the last decade, coupled with the current relatively high and stable level of use of many drugs in this population, suggest that at the height of the AOD use epidemic, many young people were abusing drugs even though they were more positively connected to adults, relatively concerned about their futures, and relatively responsive to health warnings. As the percentage of teenagers who use drugs has declined, it may be that the early gains from these efforts will be hard to extend, because the residual teenage AOD users tend to be relatively less responsive to health education messages. In any event, current knowledge shows that teenagers are heterogeneous with respect not only to AOD use but also to responsiveness to health messages and appeals to their future well-being. The young people in the highest risk environments are more alienated from adults and more oriented to present pleasure than to delayed gratification. This finding gives pause to any simple assumption that health education alone will produce major new reductions in the level of AOD use among U.S. youths.

Biological Factors

One of the most important developments in AOD use research during the past 20 years has been the exploration of the biological aspects of AOD dependence. Three conclusions from that research are of particular relevance to this report:

- There appears to be a genetic basis to the relative risk of at least some kinds of AOD dependence: some people are more vulnerable than others because of heredity. This result, it should be emphasized, does not mean that anyone is "immune" to a AOD problem; it does mean, however, that some people are relatively more vulnerable than others.
- Drugs generally work by producing an experience of pleasure that can be thought of as "stealing the signals" of the brain's own natural pleasure reward. The recognition that drugs effectively produce good feelings is of great importance to prevention.
- Once an AOD user is dependent, it is difficult for to stop and to stay stopped. It appears that a person who has once been AOD dependent remains different biologically from people who have never used drugs; this difference makes relapse common (Schuckit 1985; Schuckit and Rayses 1979; Schuckit et al. 1981).

Although much of this work has focused on alcohol use, this latter point is particularly obvious in relation to cigarette smoking: smoking is a hard habit to break, relapse is common, and former smokers are unlikely to be able to smoke occasionally without relapse into full-blown dependence again. What is not yet so widely known is whether this same phenomenon characterizes all AOD use. The biology of AOD use remains an unfinished story. Nonetheless, its significance for the development and maintenance of AOD-using behaviors makes it an important concern for prevention of AOD use.

Community Factors

Community characteristics have long been known to play a major role in the etiology of delinquency and, by extension, in the development of AOD use. Communities characterized by high levels of mobility are likely to show high levels of crime and delinquency (Farrington and West 1981; West 1982). Residential mobility also has been found to be associated with higher rates of drug initiation and use (Catalano et al. 1985; Kaplan et al. 1984), although mobility has also been reported to reduce drug use, presumably by removing the youngster from drug-using peers (L.N.Robins, personal communication, 1988).

The relationships among population density, community disorganization, and delinquent behavior are also well established (McCord and McCord 1959; Schlossman et al. 1984). It can be reasoned that disorganization and residential mobility make the monitoring of adolescents' behaviors less possible and thus less likely. In such unstable communities the family cannot rely on assistance from the informal systems of social support and controls that exist in established and stable neighborhoods.

Children living in extreme poverty and deprivation are similarly more likely to become enmeshed in delinquent and drug-using behaviors (Farrington 1985; Robins 1979; West and Farrington 1973). Moreover, it appears that persistent drug use and delinquent activity, as opposed to infrequent or occasional AOD use, is associated with growing into adulthood under conditions of extraordinary deprivation (Hawkins et al. 1987). Although it has been commonly understood for generations that social disorganization and deprivation increase the risk of AOD problems, it has been less well recognized that high levels of AOD problems in communities cause social disorganization and reduce both coping abilities and opportunities for success. Communities ravaged by AOD use are less able to provide opportunities for all members, including young people.

Identifying Youngsters Who Are At Risk

One of the most important purposes of this report is to describe the risk characteristics that predict AOD problems and to fit them to specific youngsters. One way to do this is to develop a checklist for risk factors. The Appendix to this monograph includes three screening instruments that represent early drafts of measures for use in identifying youngsters at risk for AOD use and related dysfunctional behaviors. The measures are noteworthy for the areas emphasized by each author of a child's functioning and family history, and for the strategies of quantification of behaviors suggested. We are indebted to the investigators for sharing these drafts of their work in progress.

Little research has been done on such checklists to date, but it is vitally important if the ultimate objective of the committee is to be met: harnessing the caring power of adults, especially parents and teachers, to help individual youngsters at high risk for AOD problems. It is apparent that biological, psychosocial, and communal factors must be considered in the creating of any such list or scale. In this regard, the risk-factor approach recently developed by Newcomb et al. (1986) may offer particular promise. This strategy makes use of concurrent and longitudinal data relating risk factors to AOD problems through use of regression techniques to clarify the relative contribution of each factor to AOD use. Similar analysis by Bry and her associates (1982, 1988) has suggested that the presence of a number of risk factors can be used to predict likelihood of later heavy AOD use.

A study using a 42-item questionnaire suitable for use by physicians who treat adolescents successfully discriminated the AOD risk in two study populations: 97 youths in a drug treatment program and 206 youths from a private pediatric practice (Klitzner et al. 1987). Four of the questions asked for direct self-reports of AOD use, and four other items asked about AOD use patterns of close friends or siblings. The remaining 36 items related to the risk factors identified in this report (e.g., "Have you ever had an in-school or out-of-school suspension for any reason?").

A major concern in efforts to identify youths at high risk is to intervene sufficiently early to permit the interruption of behaviors that would otherwise lead to AOD using and other dysfunctional behaviors and to do so validly (i.e., youngsters are correctly identified without inappropriate negative labeling). In the earliest school grades, youngsters at risk are distinguishable from others in terms of aggressive antisocial behavior (Emsinger et al. 1983; Magnusson et al. 1975) and particularly the combination of shyness and aggression (Kellam and Brown 1982) and evidence of school adjustment problems with a special emphasis on truancy (Bachman et al. 1981; Farrington 1985). It is important to note that antisocial behavior capable of becoming problematic can be identified as early as kindergarten (Spivak 1983) and that the identification of children at risk of AOD problems by virtue of recognized aggressive and truancy problems does not necessarily involve negative labeling of those youngsters. In some fashion those children have already been identified by school authorities as being at risk for later difficulties. However, in this early identification the potential for that identification to become the youngster's own self-fulfilling and negative prophecy needs to be recognized and countered.

By the late elementary grades, youngsters at highest risk are made still more visible by evidence of school failure (Kelly 1980; Phillips and Kelly 1979; Polk et al. 1981) now joined to aggressive behaviors. At this point, too, one can anticipate the first use of drugs and early acts of delinquency.

By adolescence, the low commitment to school and associated academic failure are evident (Bachman et al. 1982; Brooks et al. 1977; Johnston 1973; Kandel 1982; Kim 1979; Smith and Fogg 1978, 1979), as may be delinquent, drug-using friends (Kandel 1985); alienation from the larger society (Jessor and Jessor 1978; Johnston 1973; Kandel 1982; Kandel et al. 1978; Smith and Fogg 1978); and associated rebelliousness (Bachman et al. 1981; Block et al. 1984; Johnston 1973; Kandel 1982; Smith and Fogg 1978). Shortly, the adolescent drug user may drop out of school (Annis and Watson 1975) and become identifiable in other populations and settings.

5. Reduction of Risk of Alcohol and Other Drug Use

The reduction of risk of AOD use, the principal focus of this report, is related to a growing and important body of public health research and practice in many other areas, most notably efforts to reduce heart disease in the population. One of the most important developments in medicine during the past two decades has been the recognition that heart attacks and strokes are the leading causes of death in America, causing about 50 percent of all deaths—roughly three times the number of deaths caused by cancer. Although it was once thought that these diseases were relatively fixed in the population, it is now known that there are dramatic differences in the rates of death from heart disease in different populations and over time. Further, these differences have been clearly correlated with differences in what have been labeled "risk factors" for heart disease. The most significant risk factors are cigarette smoking, hypertension, and hypercholesteremia; however, many others have been identified, such as genetic factors, diet, and exercise. Research has shown that many of the risk factors are related to lifestyle and that programs that change such lifestyle factors as diet, exercise, and cigarette smoking can reduce the risk of death from heart disease.

This new body of knowledge about cardiovascular disease offers a useful model for efforts to reduce AOD use. For example, epidemiological research in the area of heart disease identified risk factors the influence of which could be clarified in controlled clinical trials. The risk factors associated with cardiovascular disease were then communicated to the medical community and the general public through professional journals and the mass media. Moreover, the studies—and their reporting in the popular press—also suggested actions to be taken by individuals and families to lower risk. One of the most significant public health achievements ever (comparable to the earlier introduction of preventive vaccines and antibiotics) has occurred in the past two decades as the reduction of high-risk behaviors has led to a one-third reduction in the death rate from heart attacks and an even larger reduction in the death rate from strokes in the United States.

It is the committee's hope that this report will help to encourage a major commitment to reducing the risk of AOD use that will soon parallel the efforts now made to reduce heart disease. Although there are many similarities (the most dramatic being cigarette smoking, which is both a risk factor in heart disease and a form of AOD use), there also are many differences:

- The success in reducing heart disease risk has come primarily from changes involving mature, often middle-aged, people, who are more settled in their lives and more concerned about the adverse health effects of their behaviors.

- The risk factors of heart disease do not involve illegal behaviors and thus do not involve the criminal law—except for cigarette smoking in public places, which has been made a target of the criminal law in recent years.
- The risk factors of heart disease do not involve mental impairment or intoxication, which have immediate and complex consequences for individuals and families beyond any caused by eating too many egg yolks or not exercising enough. In other words, people with heart disease risk factors are not killed in accidents, do not commit murders, do not drop out of school, and do not lose jobs as a result of their disease as people often do because of AOD use.

Despite these differences, however, this cardiovascular risk reduction model is useful and promising for AOD use prevention.

While traditional public health practice separates all health programs into the theoretical categories of primary, secondary and tertiary prevention, the committee has separated contemporary AOD prevention efforts into more practical categories. All of these can be thought of as falling within primary prevention and the approach half-way between primary and secondary prevention which is called "intervention." These three categories include prevention programs targeted toward particular population groups of youth—for example, a group of students in a school who participate in a specific AOD prevention program. Second are more general efforts to reduce AOD use in entire communities or large population groups, such as media campaigns, or programs involving entire school systems or even states. Third are AOD prevention efforts that target particular individual youths, teachers, or parents who work with their own children to reduce AOD use.

Targeted Programs to Reduce Risk of Alcohol and Other Drug Use

These programs are often seen as the vital research core of knowledge development. If risk reduction can be achieved in high-impact, highly focused programs, it can then be translated into more broadly implemented efforts to realize its full potential. In this regard, the analogy to risk reduction in heart disease is apt: with the demonstration a decade ago that reducing high blood pressure reduces the risk of heart attacks and strokes, there was a basis for large-scale public health efforts. More recently, recognition of elevated serum cholesterol as a risk factor for heart disease has led to a major national effort to reduce the risk of heart disease through identification and intervention. Indeed, if research findings from small, scientific studies are to be used, they *must* be applied (as findings about blood pressure and serum cholesterol are now being applied) far beyond the original, relatively small-scale research studies.

General Efforts to Reduce Risk of Alcohol and Other Drug Use

The second area of risk reduction for AOD use involves organized efforts in schools and communities. These efforts are not tightly defined, like research programs, but are more open and often far larger in their impact. Typical examples of this type of prevention include the development of new AOD-use prevention curricula and new school policies aimed at reducing AOD use by students. There also are a growing number of family-based approaches, such as parent peer groups and Tough Love groups, that have a similarly broad focus. One of the most important new developments in AOD use prevention during the past few years has been the widespread use of these community-based AOD-use prevention efforts.

Individualized Prevention Efforts

The third area of risk reduction is potentially the most important of all. It is also the most complex. This is the specific action taken by individuals to reduce the risk to other individuals. The analogy to risk reduction of heart disease is useful. Individual actions, not organized programs or even large-scale community projects, have done the most to reduce the rate of heart attacks and strokes for Americans over the past two decades. The analogous efforts in prevention of AOD use involve the actions taken by youths themselves in dealing with their own behavior and that of their peers; the actions of adults who are concerned with youngsters, including parents, teachers, physicians; and the actions taken by the broad range of youth workers. Little research now exists to guide these individualized, specific actions, but what does exist suggests that the key to success is positive bonding between teenagers and adults over the related goals of stopping AOD use and promoting positive life goals for young people.

Efforts in all three of these areas need to be divided into age-specific activities. The committee has identified six age groups for AOD-use prevention activities:

- conception through the fourth grade
- fifth, sixth, and seventh grades
- eighth, 9th, and 10th grades
- 11th and 12th grades
- college
- after-school years (entering the workplace)

The first group is often overlooked in prevention of AOD use, but it is vitally important. Research has shown that experiences during the mother's pregnancy can have an impact on cognitive functioning and thereby on later psychosocial performance (Tarter et al. 1985). Prenatal care and good maternal nutrition can reduce the general risk of health problems (Suffet and Brotman 1984). Other early risk factors, especially genetic factors, are important but not modifiable. On the other hand, how such immutable factors are approached by the families of young people at high risk is likely to determine their eventual impact on particular young people. For example, having a close relative with an AOD problem can be a compelling reason for a young person not to start using. In this way, genetic risk can be used to give a positive AOD use-prevention message. Working with teachers, parents, and other adults during the preadolescent years in positive ways can promote healthy bonding and thus reduce risk for later AOD use.

The analogy to cardiovascular risk reduction is important and useful in thinking about how to approach unchangeable risk factors. How does a family respond, with respect to its children, to a high genetic risk of early heart attacks? One option, commonly taken, is fatalism. Contrast these statements: (a) "The men in our family die young of heart attacks, so I need to crowd as much living as I can into the time I have available." (b) "Because we cannot change our genetic makeup, in our family we work extra hard beginning in childhood on influencing constructively the risk factors we can change, such as smoking, diet, and exercise." Both statements are understandable reactions to a high, genetically determined, and unchangeable risk of heart attack death. The first approach adds to that risk; the second reduces it. A similar option exists for families with high risk of AOD dependence.

Fifth to seventh grades are the most important in terms of preventing initial AOD use among schoolchildren because it is during these grades that the youths at highest risk of serious AOD problems are most likely to initiate AOD use (usually starting with tobacco and alcohol or in especially high-risk areas, with crack). These are also, for most youths, the last years when they are amenable to prevention efforts in the absence of widespread peer use of AODs.

Eighth to 10th grades are the times when most young people who are ever going to use drugs will begin. These are the years when attitudes toward personal and peer use of AODs are most likely to change from relatively negative to accepting or positive. These are the years when young people are most likely to be in doubt about their own identities on issues of AOD use; it is the period of most unsettled identity and values. These years are also likely to be the most difficult for prevention programs because of shifts in values as parents and other adults vie for influence with youngsters' peers.

Eleventh and 12th grades are years of consolidation for some young people, but for many others they are a period of intensification or abandonment of AOD-using behaviors. They are also important years for establishing adult identity, especially with regard to the role of education.

College-bound high school students generally use AODs less than their non-college-bound peers. Once young people get to college, however, they tend to catch up with their noncollege peers and AOD use rates rise steeply (Johnston 1973; Johnston et al. in press). The most disturbing aspect of this progression of AOD use at college is the high rate of alcohol use, exceeding even the high rate of alcohol use of similar age groups who do not go to college. Very heavy use of alcohol is often associated with the college years and is a frequent cause of premature termination of college education.

Entry into the workplace, the final step from youth to adulthood for many young people, can occur at any age from about 16 to about 25; the ages between 18 and 23 are the most common for beginning full-time work. The shift to work from school may also involve leaving the parental home. One of the most important observations from recent AOD use epidemiology is that leaving the parental home, whether for college or for work, is often associated with an increase in the use of AODs (Bachman et al. 1984). Presumably, this increase in AOD use is the result of the loss of the inhibiting effect of parents on AOD use by young people. This interpretation is strengthened by the finding that marriage is associated with reducing the use of AODs, as is, to a lesser extent, entering the workforce full time (Bachman et al. 1984).

In each of these six age-specific areas, interventions can involve any of the three broad types of approaches that have been outlined, namely, targeted programs, large-scale prevention activities, and individual and family interventions.

These six age-specific groupings are not meant to be the only way of separating prevention programs, but the committee is persuaded that prevention of AOD use needs to be developmentally specific because of the profound changes that are occurring in youths during the ages when they are at greatest risk of initiating AOD use. This sort of developmental specificity is common in education, but it is uncommon in health promotion efforts. The prevention needs of a fifth-grader are significantly different from those of a ninth-grader, and these are in turn quite different from the needs of a college sophomore. Unless these differing developmental needs are taken into consideration, it is unlikely that prevention efforts will succeed.

This report is focused on prevention efforts when young people are first making decisions about use of AODs, from about age 12 to about age 20. We have not addressed first AOD use that occurs involuntarily at a far younger age: exposure of the unborn fetus to AODs. This is now a common experience as marijuana, cocaine, heroin, and other illegal drugs join alcohol and tobacco as major prenatal risk factors. This very early AOD use, although a major focus of OSAP's prevention efforts, is not dealt with in this report.

The Dilemma of Helping Young People Versus Punishing Destructive Behaviors

One of the potentially troubling aspects of prevention of AOD use for many adults who work with young people is the role of punishment in prevention. As a general principle, most psychological and treatment professionals are reluctant to use any form of punishment, such as prohibiting television viewing or keeping youths after school. Even more controversial are harsh punishments for teenagers such as expulsion from school and criminal prosecution for AOD use or sale. The committee takes the position that the system of social responses to AOD use needs to include the full range of options from the most positive forms of reinforcement to the most negative. To ignore or reject punishment is as unreasonable as to rely exclusively, or even primarily, on punishment for preventing AOD use.

A common observation from the AOD use treatment community and from the members of Alcoholics Anonymous and Narcotics Anonymous is that AOD users of all ages stop only when they "hit bottom," that is, when the costs of their AOD use are so high for them that they are forced to give up the physical pleasure (positive reinforcement) they derive from using. Such costs are of three kinds:

- the dollar cost of the drugs themselves
- the health costs of AOD use (from marijuana-caused panic, to delirium tremens caused by drinking, to overdoses caused by cocaine or heroin)
- the social costs, such as losing a driver's license, going to jail, or being socially ostracized

The Nation's supply-reduction strategy over the last two decades has focused on the first cost—raising the dollar cost of purchasing drugs. In an environment of increasing demand for drugs, this strategy generally has not been successful in reducing AOD availability and use. There also are serious limitations to the deterrent effects of health costs. Among these are that most health costs of AOD use are paid at later ages and that most youths who are at high risk of AOD use are relatively unconcerned about delayed and uncertain negative health consequences. Social cost is left as the most promising target for "raising the bottom" for AOD use. Raising the social cost of AOD use for teenagers means creating negative consequences to the decision to use drugs.

One of the keys to achieving this goal is the identification of youths who use AODs. One way of doing so reliably is by urine testing. It is this connection of urine testing and punishment for youngsters that creates the greatest controversy in the AOD-use prevention field. For members of the committee, this issue created the greatest division. Although some committee members favored widespread urine testing of all young people in the family, at school, and by physicians who take care of teenagers, many other committee members were skeptical, or even hostile, to this hard-line approach.

One thing is clear about this issue, however: there is need for carefully designed research to explore the issues of urine testing and punishment (i.e., raising the bottom) among teenagers. In the absence of reliable knowledge on these issues, it is likely that they will continue to generate more heat than light. Even without such study, however, there is a clinical awareness that simply permitting young people to continue to use AODs without tough-minded intervention by adults who care for them is not "helping" them. It is also clear that interventions that lead to cessation of AOD use by using teenagers are "helping," even if they involve what can be defined as tough interventions. What is far less clear is which young people require such tough interventions and which specific interventions are most likely to produce good, not bad, outcomes.

The Dilemma of Stigmatization

Another troubling dilemma in the prevention field is the potential negative effect of labeling some youths as "high risk" and thereby depriving them of opportunities or subjecting them to problems that would not have occurred in the absence of the labeling. This problem is serious, and there is a need to protect the interests of the youths involved. For many youths in high-risk environments, other problem behavior (such as school failure, truancy, rebelliousness, and delinquency) has already labeled them in school and in the family as problem youths or troublemakers. It is important to consider that the concept of risk involves relative probabilities of various outcomes, not certainties. Some youths who are not at high risk will develop serious AOD problems, just as some who are not will avoid AOD use altogether, even without intervention. The concept of risk needs to be understood as helpful but limited. By the same token, care must be taken that the suggestion of later difficulty does not become a self-fulfilling prophecy through the actions of the youngsters or their advocates.

The key is to take actions that are in the best interest of the individual, even though the actions are not always pleasant. For example, in recognition of the school's need to act responsibly and unambiguously on the health issue of smoking, many schools have elected to close smoking areas previously designated for students. This conflict between what some youths want and what is widely perceived to be in their best interest is recurrent in our—and probably any—society. It is the complex task of parents and society to mix freedom with guidance and controls to achieve growth and the eventual assumption of adult responsibility.

The difficulty in determining what action is in the youth's best interest was well illustrated by the committee's response to the question, What should be done with or for ninth-graders who begin smoking cigarettes? It is an important commentary on prevention theory that this common problem did not result in any clear or universally agreed-on response. Some committee members thought talking with the young persons was sufficient—to ensure that they knew the facts about the negative health effects of smoking. Other committee members were eager to impose strong negative sanctions on smoking, including, for example, involving the parents as well as the school in efforts to raise the social cost of smoking by taking such actions as denying access to after-school activities or to the use of the car or television at home. The disagreement on this single point highlights again the need for research into the probable consequences of applying different responses to such common teenage behavior. In discussing alcohol use by ninth-graders, the committee's response was similarly divided. One principle, however, seemed clear to all committee members: it is important that the meting out of any punishment to an AOD-using youth be done in such a way as to preserve the youth's positive relationships with family and other adults and to promote, rather than foreclose, opportunities for future education and positive behavior change.

The instances of committee disagreement illustrate not only the difficulty of reaching consensus on appropriate contingencies for AOD-using behaviors, but also the role that prevention must play even after AOD use is initiated. It is important to recognize that the prevention of AOD use is an even more complex task than preventing first AOD use. In other words, the first goal of prevention, and in many ways the easier and more important goal, is to stop AOD use before it starts. However, if this effort fails (as it often does in the United States today), all is not yet lost. Intervention strategies are vitally important for young people who have initiated AOD use. It is important not only to prevent progression to other AOD use (e.g., from alcohol use to marijuana use or from marijuana to cocaine) but also to prevent intensified AOD use (e.g., movement from occasional use of alcohol to heavy or frequent use of alcohol).

6. Next Steps

Action Programs

The committee strongly supports the development of a new generation of prevention programs in all three areas described in section 5. There is an urgent need for tightly controlled studies of specific programs to help identify successful and unsuccessful types of intervention. It is important that new efforts be made by organizations and institutions dealing with young people. Finally, the committee strongly supports new efforts to identify youths in high-risk environments and to intervene to reduce individual risk.

Knowledge Development

The development of methods for identifying and intervening with youths at risk of AOD use and related problems is a pressing item on the national agenda. This report has presented expert judgments concerning methods for identification and intervention based on our understanding of current, state-of-the-art theory and research. However, it is clear that additional work is necessary to move from current “best guesses” to more refined and scientifically defensible positions.

Our understanding of the causes of AOD use remains rudimentary. It is now clear that there are numerous pathways to AOD use. Many of these pathways are being systematically researched only now, and some remain largely theoretical. Moreover, it is not clear how these various pathways interact with one another in producing AOD-related behavior in a given individual.

Nor is our understanding of the risk factors comprising these pathways well developed. Considerable debate continues concerning whether the variables that have been found to relate to AOD use are risk factors for, correlates of, or consequences of AOD use. This uncertainty is equally true of relationships observed in longitudinal and cross-sectional studies. That a given factor precedes the emergence of AOD use is not sufficient evidence of causal relation. However, repeated findings of the presence of specific factors or events suggest the high likelihood of cause. There is obvious need for a clear understanding of causal relationships. Causal risk factors for AOD use must be discriminated from factors that are only correlates in order to allow the development of relevant prevention programming.

Finally, there has been a tendency to treat the dependent variable in etiological studies too broadly. Although it is likely that the pathways that lead to use of cigarettes, alcohol, marijuana, cocaine, and other drugs are *similar*, there is also reason to suspect that they are not sufficiently similar to make a single etiological explanation of AOD use sufficient. Differences among drugs in pharmacology and effects, the economics of production and distribution, societal attitudes, and legal restrictions on production and use suggest the need to explore substance-specific approaches as well. Moreover, study of the multiple pathways to the different forms of AOD use may benefit from a multidisciplinary approach permitting the collaboration of investigators from several fields, including psychology, sociology, law, psychiatry, genetics, education, and biology.

Research

Mindful of these considerations, we recommend that considerable research be devoted to studies exploring the causes of AOD use. Clearly, longitudinal research will contribute to this objective. However, longitudinal studies that include only natural variation in the variables of interest can never firmly establish causal relationships. Therefore, where technically and ethically feasible, additional study should include manipulation of key variables in order to determine whether or not these manipulations result in short- or long-term differences in AOD-related behavior. For example, although epidemiological research showed that high blood pressure was correlated with heart attacks and strokes, it was only when it could be shown that reducing blood pressure actually reduced heart attack and stroke rates that intervention programs to reduce blood pressure could be scientifically justified. Similar action programs aimed at specific AOD-use risk factors are needed to target intervention programs more accurately and effectively. In brief, longitudinal study can help to delineate the key variables of concern to understanding the development of AOD use. Additional work is needed to manipulate those variables to provide clarification both of their role in the appearance of AOD use and of our capacity to limit their influence.

Because of the pressing need for etiological data, we also recommend considerable emphasis on retrospective studies. Although such studies present numerous methodological and interpretive challenges, we believe that they have been underused in guiding theory development in the AOD use area. Exploring historical differences between current users and nonusers is an efficient and potentially powerful method for the development of etiological hypotheses and for preliminary hypotheses testing. The recent contributions of "psychological autopsies" to investigate the causes of adolescent suicide provide one example of the promise of well-designed retrospective studies. The "case-control" epidemiological technique also holds promise. This approach has been useful, for example, in cancer research when researchers are trying to establish a causal link between a particular exposure and a particular type of cancer. The rates of occurrence of the exposure are compared in people with the cancer and in a carefully matched control group. When significant differences in exposure are identified, a causal relationship is strongly indicated.

Retrospective etiological research needs to be received more favorably. Such studies are likely to be an important step in etiological theory building about the causes of AOD use. Such studies must meet the current definitions and standards of scientific rigor required to gain Initial Review Group (IRG) approval and fundable priority scores.

Equally important will be an effort to permit and encourage studies making use of quasi-experimental design that will allow an assessment of the efficacy of promising community-based interventions for which traditional control groups or conditions are not feasible. The study of these typically large-scale prevention efforts might be preceded, in some instances by the funding of smaller scale, descriptive studies or so-called pilot studies leading to effective large-scale outcome studies. Since the creation of OSAP in 1986, initiatives have occurred for large-scale communication, prevention, and demonstration programs. Evaluation has been an integral component of all new OSAP initiatives. More than 130 prevention programs have received demonstration grants, and careful effort has been made to ensure culturally relevant programming. Increased recognition of the value of demonstration research, without sacrificing research quality, has augmented the contribution of prevention research to prevention service delivery.

Demonstrations

Although some of the directions this research will take await the findings of additional etiological research, we offer a number of recommendations for immediate action.

First, additional projects like those funded by OSAP are needed to investigate further the special needs of populations other than white, middle-class, largely suburban youngsters. Although this recommendation echoes similar recommendations over the past two decades, substantive progress has occurred only since 1986. Indeed, the research literature awaits the outcome of several OSAP-funded projects in order to provide guidance for defining the AOD-use prevention needs of lower income, nonwhite, inner-city youth.

Second, although intervention initiatives are beginning to pay greater attention to developmental issues and individual differences, much more study is needed. Previous sections of this report reflect the committee's strong belief that risk factors must be viewed in a developmental context and that different pathways to AOD use must be recognized. Similarly, the committee holds that interventions must be tailored to the cognitive, moral, and social developmental levels of the target population, as well as to the specific underlying biological, psychological, sociological, and environmental processes that put individual youths at risk. Many interventions currently funded by OSAP specify precisely the children for whom the intervention is intended and attempt to focus on specific target groups.

A variety of approaches have been described in this report as showing promise, and they deserve adaptation and further study with youngsters of different ages and backgrounds. These often overlapping approaches include training in behavioral skills development, parent management, assertiveness, and refusal skills, as well as environmental changes. The various strategies may be employed using a multiple-gating procedure so that youngsters at risk for AOD use are gradually winnowed from the larger population of youngsters (e.g., from a school population) through successive and increasingly rigorous screening procedures.

Third, the assumption that interventions can be effective across AOD categories must be tested. Like etiological models, certain interventions may be highly drug specific. Indeed, the effectiveness of some strategies in preventing alcohol and marijuana use, as opposed to cigarette smoking (for which these strategies were developed), suggests that interventions that are successful with one AOD may have limited effectiveness when applied to other drugs.

Fourth, interventions must be developed for study that involves a greater investment of resources and energies than we see with many current approaches. As the discussions of risk factors earlier in this report clearly suggest, many of the precursors to AOD use are psychological characteristics, social orientations, and behavioral predispositions that develop in individuals or in their environments over many years and through multiple life experiences. Counteracting these experiences or mitigating their impact will require considerable expenditure of effort, time, and dollars. By these criteria, most available interventions must be considered relatively weak. Still, prevention and intervention strategies may be considerably expanded in terms of scope and expense before their costs begin to approach the costs of either treating AOD use or meeting the societal consequences of having untreated users.

Finally, methods must be developed for improving the strength and integrity of the implementation of preventive interventions. Considerable research evidence suggests that intervention strategies are not generally well implemented. The transition from the research setting, with its close attention to detail and intense monitoring of process, to settings in the real world is currently being addressed by OSAP through a management information system, which evaluates ongoing activities and interim analysis of all its projects in an effort to identify the most promising strategies and quickly make them available in applied settings. ADAMHA and its institutes have begun to play a strong role in permitting and encouraging the transition from research to practice. Through the use of manuals, workshops, videotapes, and other informational channels, the institutes and OSAP through its National Clearinghouse can assure that research information important to prevention practice finds its way to community activists and service providers in a structure and language that can be useful to them and to the communities they serve.

At the same time, it will be useful for prevention planners and providers to build in an assessment of their own effectiveness. Through the evaluation of their own performance, program staff can determine not only how well they are doing but also what parts of their program need retooling and what additional efforts they might find worthwhile. A manual designed to take nonresearchers through the steps of evaluation, entitled *Handbook for Evaluating Alcohol and Other Drug Prevention Programs* (Hawkins and Nederhood 1987), is available from the National Clearinghouse for Alcohol and Drug Information, P.O. Box 2345, Rockville, Maryland 20852, 301-468-2600. In addition, Robins (1987) provides useful suggestions for the design and implementation of prevention studies.

The Community's Role in Knowledge Development

In addition to the committee's own recommendations concerning causation and intervention research, the committee believes there is a need for public debate in defining a research agenda for the general area of AOD use and for the specific area of identification and intervention. Scientific research should provide guidance concerning methods for accomplishing society's objectives in these areas—it cannot determine what these objectives should be. Both case identification and intervention with identified individuals pose risks and promise benefits. How much risk is society willing to incur in order to realize which benefits must be openly debated, both by professionals and by the public at large?

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Figures

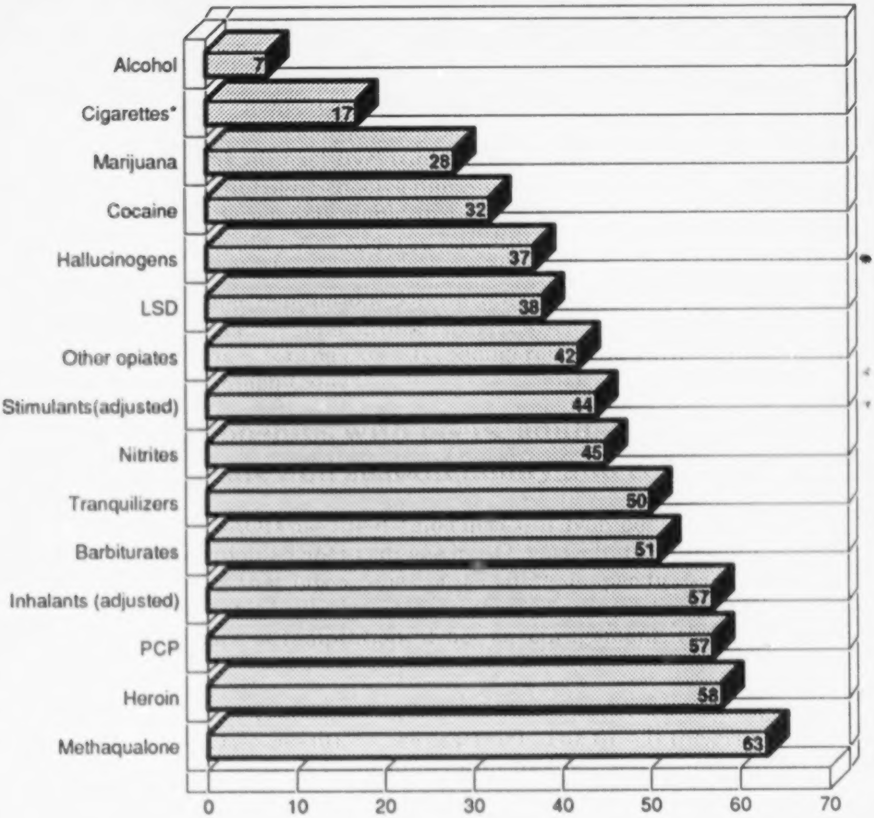

Figure 1. *Noncontinuation rates: Percent of 1987 U.S. high school seniors who had ever used a drug in their lifetimes but did not use in the past year, by drug type.*

**Percent of regular smokers (ever) who did not smoke at all in the past 30 days.*

Source: Johnston et al.

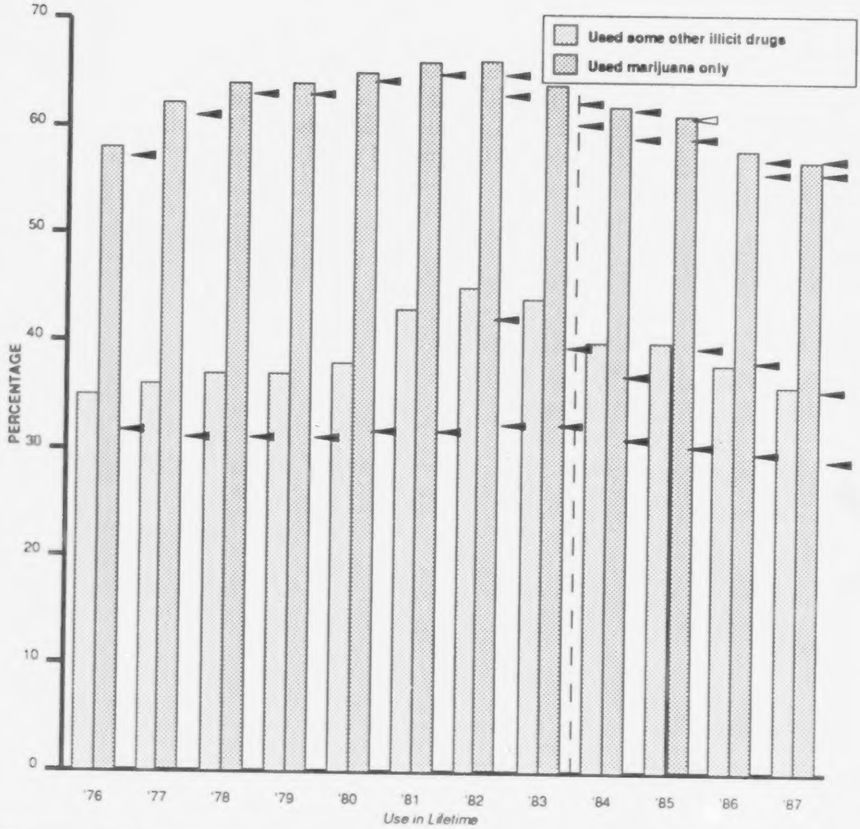

Figure 2. *Lifetime prevalence: Percent of U.S. high school seniors who had ever used an illicit drug, by drug type.*

NOTES: *Use of "some other illicit drugs" includes any use of hallucinogens, cocaine, and heroin, or any use which is not under a doctor's orders of other opiates, stimulants, sedatives, or tranquilizers.*

The black arrow indicates the percentage which results if all stimulants are excluded from the definition of "illicit drugs." The white arrow shows the percentage which results if only nonprescription stimulants are excluded.

The dashed vertical line indicates that after 1983 the shaded and open bars are defined by using the amphetamine questions which were revised to exclude nonprescription stimulants from the definition of "illicit drugs."

Source: Johnston et al.

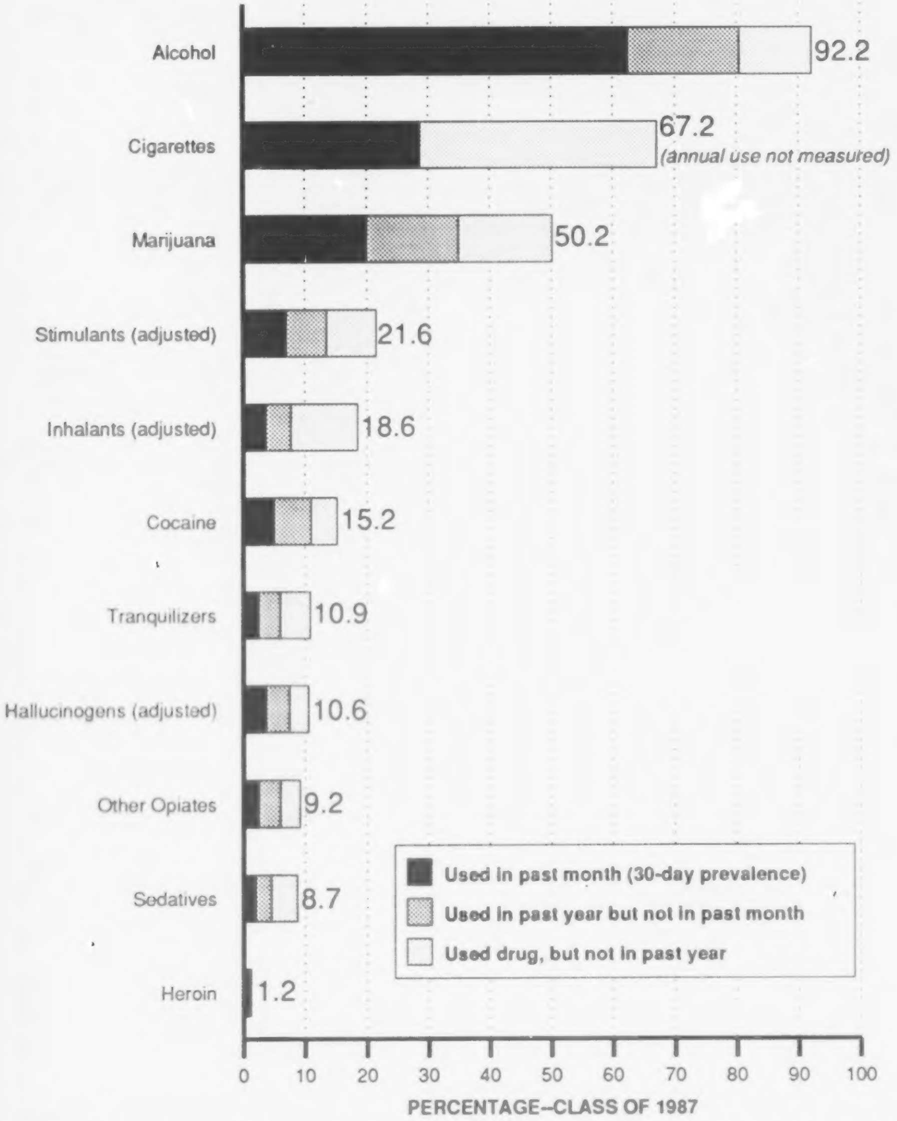

Figure 3. *Prevalency and recency: Percent of 1987 U.S. high school seniors who had used a drug in their lifetimes, in the past year, or in the past month, by drug type.*

Source: Johnson et al.

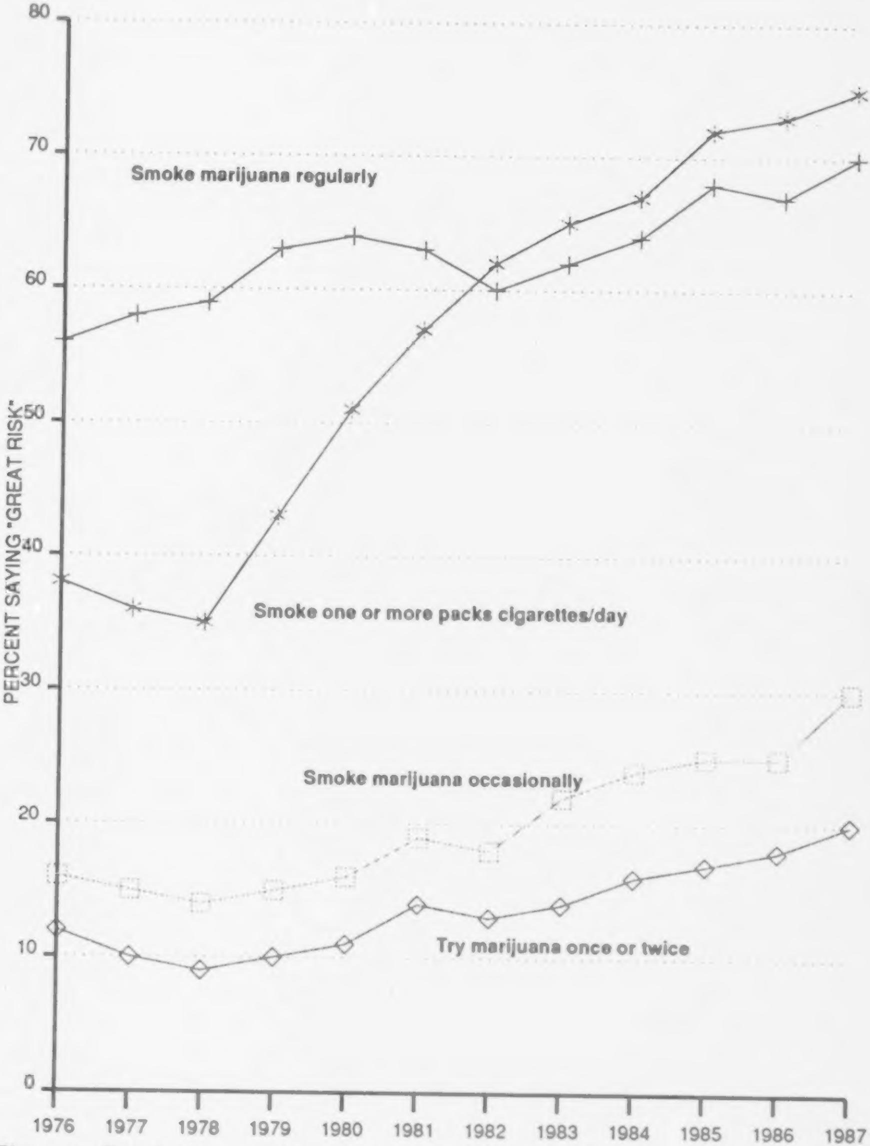

Figure 4. *Trends of perceived harmfulness of marijuana and cigarettes among U.S. high school seniors, 1976 to 1987.*

Source: Johnston et al.

Tables

Table 1. Persistence of use of gateway drugs in high school students, 1988

Drug	% ever used	% current users	% of ever-users who are current users
Cigarettes	66	29	44
Alcohol	92	64	70
Marijuana	47	18	38
Cocaine	12	3	25

Source: Johnston, L.D., 1989.

Table 2. Trends in 30-day prevalence of 18 types of drugs among U.S. high school seniors, 1975-88

Drug	Percent who used in past 30 days														
	Class of 1975	Class of 1976	Class of 1977	Class of 1978	Class of 1979	Class of 1980	Class of 1981	Class of 1982	Class of 1983	Class of 1984	Class of 1985	Class of 1986	Class of 1987	Class of 1988	1987-88 change
Approx. N =	(9400)	(15400)	(17100)	(17800)	(15500)	(15900)	(17500)	(17700)	(16300)	(15900)	(16000)	(15200)	(16300)	(16300)	
Marijuana/hasish	27.1	32.2	35.4	37.1	36.5	33.7	31.6	28.5	27.0	25.2	25.7	23.4	21.0	18.0	-3.0ss
Inhalants[a]	NA	0.9	1.3	1.5	1.7	1.4	1.5	1.5	1.7	1.9	2.2	2.5	2.8	2.6	-0.2
Inhalants adjusted[b]	*NA*	*NA*	*NA*	*NA*	*3.2*	*2.7*	*2.5*	*2.5*	*2.5*	*2.6*	*3.0*	*3.2*	*3.5*	*3.0*	*-0.5*
Amyl and butyl nitrites[c,h]	NA	NA	NA	NA	2.4	1.8	1.4	1.1	1.4	1.4	1.6	1.3	1.3	0.6	-0.7s
Hallucinogens	4.7	3.4	4.1	3.9	4.0	3.7	3.7	3.4	2.8	2.6	2.5	2.5	2.55	2.2	-0.3
Hallucinogens adjusted[d]	*NA*	*NA*	*NA*	*NA*	*5.3*	*4.4*	*4.5*	*4.1*	*3.5*	*3.2*	*3.8*	*3.5*	*2.8*	*2.3*	*-0.5*
LSD	2.3	1.9	2.1	2.1	2.4	2.3	2.5	2.4	1.9	1.5	1.6	1.7	1.8	1.8	0.0
PCP[c,h]	NA	NA	NA	NA	2.4	1.4	1.4	1.0	1.3	1.0	1.6	1.3	0.6	0.3	-0.3
Cocaine	1.9	2.0	2.9	3.9	5.7	5.2	5.8	5.0	4.9	5.8	6.7	6.2	4.3	3.4	-0.9ss
Crack[g]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	1.6	+0.1
Other cocaine[c]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.1	3.2	-0.9
Heroin	0.4	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.0
Other opiates[e]	2.1	2.0	2.8	2.1	2.4	2.4	2.1	1.8	1.8	1.8	2.3	2.0	1.8	1.6	-0.2
Stimulants[e]	8.5	7.7	8.8	8.7	9.9	12.1	15.8	13.7	12.4	NA	NA	NA	NA	NA	NA
Stimulants adjusted[e,f]	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*10.7*	*8.9*	*8.3*	*6.8*	*5.5*	*5.2*	*4.6*	*-0.6*
Sedatives[e]	5.4	4.5	5.1	4.2	4.4	4.8	4.6	3.4	3.0	2.3	2.4	2.2	1.7	1.4	-0.3
Barbiturates[e]	4.7	3.9	4.3	3.2	3.2	2.9	2.6	2.0	2.1	1.7	2.0	1.8	1.4	1.2	-0.2
Methaqualone[e]	2.1	1.6	2.3	1.0	2.3	3.3	3.1	2.4	1.8	1.1	1.0	0.8	0.6	0.5	-0.1
Tranquilizers[e]	4.1	4.0	4.0	3.4	3.7	3.1	2.7	2.4	2.5	2.1	2.1	2.1	2.0	1.5	-0.5s
Alcohol	68.2	68.3	71.2	72.1	71.8	72.0	70.7	69.7	69.4	67.2	65.9	65.3	66.4	63.9	-2.5s
Cigarettes	36.7	38.8	38.4	36.7	34.4	30.5	29.4	30.0	30.3	29.3	30.1	29.6	29.4	28.7	-0.7

NOTES: Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. NA indicates data not available.

a. Data based on four questionnaire forms. N is four-fifths of N indicated.
b. Adjusted for underreporting of amyl and butyl nitrites. See text for details.
c. Data based on a single questionnaire form. N is one-fifth of N indicated.
d. Adjusted for underreporting of PCP. See text for details.
e. Only drug use which was not under a doctor's orders is included here
f. Based on the data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription stimulants.
g. Data based on two questionnaire forms. N is two-fifths of N indicated.
h. Question text changed slightly in 1987.

Source: University of Michigan (1989).

Table 3. Trends in lifetime prevalence of 18 types of drugs among U.S. high school seniors, 1975-88

Percent who had used in their lifetimes

Drug	Class of 1975	Class of 1976	Class of 1977	Class of 1978	Class of 1979	Class of 1980	Class of 1981	Class of 1982	Class of 1983	Class of 1984	Class of 1985	Class of 1986	Class of 1987	Class of 1988	1987-88 change
Approx. N =	(9400)	(15400)	(17100)	(17800)	(15500)	(15900)	(17500)	(17700)	(16300)	(15900)	(16000)	(15200)	(16300)	(16300)	
Marijuana/hashish	47.3	52.8	56.4	59.2	60.4	60.3	59.5	58.7	57.0	54.9	54.2	50.9	50.2	47.2	-3.0ss
Inhalants[a]	NA	10.3	11.1	12.0	12.7	11.9	12.3	12.8	13.6	14.4	15.4	15.9	17.0	16.7	-0.3
Inhalants adjusted[b]	*NA*	*NA*	*NA*	*NA*	*18.2*	*17.3*	*17.2*	*17.7*	*18.2*	*18.0*	*18.1*	*20.1*	*18.6*	*17.5*	*-1.1*
Amyl and butyl nitrites [c,h]	NA	NA	NA	NA	11.1	11.1	10.1	9.8	8.4	8.1	7.9	8.6	4.7	3.2	-1.5s
Hallucinogens	16.3	15.1	13.9	14.3	14.1	13.3	13.3	12.5	11.9	10.7	10.3	9.7	10.3	8.9	-1.4s
Hallucinogens adjusted [d]	*NA*	*NA*	*NA*	*NA*	*17.7*	*15.6*	*15.3*	*14.3*	*13.6*	*12.3*	*12.1*	*11.9*	*10.6*	*9.2*	*-1.4s*
LSD	11.3	11.0	9.8	9.7	9.5	9.3	9.8	9.6	8.9	8.0	7.5	7.2	8.4	7.7	-0.7
PCP [c,h]	NA	NA	NA	NA	12.8	9.6	7.8	6.0	5.6	5.0	4.9	4.8	3.0	2.9	-0.1
Cocaine	9.0	9.7	10.8	12.9	15.4	15.7	16.5	16.0	16.2	16.1	17.3	16.9	15.2	12.1	-3.1sss
Crack [g]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6	4.8	-0.8
Other cocaine [c]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.0	12.1	-1.9
Heroin	2.2	1.8	1.8	1.6	1.1	1.1	1.1	1.2	1.2	1.3	1.2	1.1	1.2	1.1	-0.1
Other opiates [e]	9.0	9.6	10.3	9.9	10.1	9.8	10.1	9.6	9.4	9.7	10.2	9.0	9.2	8.6	-0.6
Stimulants [e]	22.3	22.6	23.0	22.9	24.2	26.4	32.2	35.6	35.4	NA	NA	NA	NA	NA	NA
Stimulants adjusted [e,f]	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*27.9*	*26.9*	*27.9*	*26.2*	*23.4*	*21.6*	*19.8*	*-1.8s*
Sedatives [e]	18.2	17.7	17.4	16.0	14.6	14.9	16.0	15.2	14.4	13.3	11.8	10.4	8.7	7.8	-0.9
Barbiturates [e]	16.9	16.2	15.6	13.7	11.8	11.0	11.3	10.3	9.9	9.9	9.2	8.4	7.4	6.7	-0.7
Methaqualone [e]	8.1	7.8	8.5	7.9	8.3	9.5	10.6	10.7	10.1	8.3	6.7	5.2	4.0	3.3	-0.7
Tranquilizers [e]	17.0	16.8	18.0	17.0	16.3	15.2	14.7	14.0	13.3	12.4	11.9	10.9	10.9	9.4	-1.5s
Alcohol	90.4	91.9	92.5	93.1	93.0	93.2	92.6	92.8	92.6	92.6	92.2	91.3	92.2	92.0	-0.2
Cigarettes	73.6	75.4	75.7	75.3	74.0	71.0	71.0	70.1	70.6	69.7	68.8	67.6	67.2	66.4	-0.8

NOTES: Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. NA indicates data not available.

a Data based on four questionnaire forms. N is four-fifths of N indicated.

b Adjusted for underreporting of amyl and butyl nitrites. See text for details.

c Data based on a single questionnaire form. N is one-fifth of N indicated.

d Adjusted for underreporting of PCP. See text for details.

e. Only drug use which was not under a doctor's orders is included here.

f. Based on the data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription stimulants.

g Data based on two questionnaire forms. N is two-fifths of N indicated.

h. Question text changed slightly in 1987.

Source: University of Michigan (1989).

Table 4. Trends in perceived harmfulness of drugs among U.S. high school seniors, 1975-87

	Percentage saying "great risk"[a]													
Q. How much do you think people risk harming themselves (physically or in other ways), if they . . .	Class of 1975	Class of 1976	Class of 1977	Class of 1978	Class of 1979	Class of 1980	Class of 1981	Class of 1982	Class of 1983	Class of 1984	Class of 1985	Class of 1986	Class of 1987	1986-87 change
Try marijuana once or twice	15.1	11.4	9.5	8.1	9.4	10.0	13.0	11.5	12.7	14.7	14.8	15.1	18.4	+3.3ss
Smoke marijuana occasionally	18.1	15.0	13.4	12.4	13.5	14.7	19.1	18.3	20.6	22.6	24.5	25.0	30.4	+5.4sss
Smoke marijuana regularly	43.3	38.6	36.4	34.9	42.0	50.4	57.6	60.4	62.8	66.9	70.4	71.3	73.5	+2.2
Try LSD once or twice	49.4	45.7	43.2	42.7	41.6	43.9	45.5	44.9	44.7	45.4	43.5	42.0	44.9	+2.9
Take LSD regularly	81.4	80.8	79.1	81.1	82.4	83.0	83.5	83.5	83.2	83.8	82.9	82.6	83.8	+1.2
Try PCP once or twice	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	55.6	NA
Try cocaine once or twice	42.6	39.1	35.6	33.2	31.5	31.3	32.1	32.8	33.0	35.7	34.0	33.5	47.9	+14.4sss
Take cocaine occasionally	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	54.2	54.2	66.8	+12.6sss
Take cocaine regularly	73.1	72.3	68.2	68.2	69.5	69.2	71.2	73.0	74.3	78.8	79.0	82.2	88.5	+6.3ss
Try heroin once or twice	60.1	58.9	55.8	52.9	50.4	52.1	52.9	51.1	50.8	49.8	47.3	45.8	53.6	+7.8sss
Take heroin occasionally	75.6	75.6	71.9	71.4	70.9	70.9	72.2	69.8	71.8	70.7	69.8	68.2	74.6	+6.4sss
Take heroin regularly	87.2	88.6	86.1	86.6	87.5	86.2	87.5	86.0	86.1	87.2	86.0	87.1	88.7	+1.6
Try amphetamines once or twice	35.4	33.4	30.8	29.9	29.7	29.7	26.4	25.3	24.7	25.4	25.2	25.1	29.1	+4.0ss
Take amphetamines regularly	69.0	67.3	66.6	67.1	69.9	69.1	66.1	64.7	64.8	67.1	67.2	67.3	69.4	+2.1
Try barbiturates once or twice	34.8	32.5	31.2	31.3	30.7	30.9	28.4	27.5	27.0	27.4	26.1	25.4	30.9	+5.5sss
Take barbiturates regularly	69.1	67.7	68.6	68.4	71.6	72.2	69.9	67.6	67.7	68.5	68.3	67.2	69.4	+2.2
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)	5.3	4.8	4.1	3.4	4.1	3.8	4.6	3.5	4.2	4.6	5.0	4.6	6.2	+1.6s
Take one or two drinks nearly every day	21.5	21.2	18.5	19.6	22.6	20.3	21.6	21.6	21.6	23.0	24.4	25.1	26.2	+1.1
Take four or five drinks nearly every day	63.5	61.0	62.9	63.1	66.2	65.7	64.5	65.5	66.8	68.4	69.8	66.5	69.7	+3.2s
Have five or more drinks once or twice each weekend	37.8	37.0	34.7	34.5	34.9	35.9	36.3	36.0	38.6	41.7	43.0	39.1	41.9	+2.8
Smoke one or more packs of cigarettes per day	51.3	56.4	58.4	59.0	63.0	63.7	63.3	60.5	61.2	63.8	66.5	66.0	68.6	+2.6
Approx. N =	(2804)	(2918)	(3052)	(3770)	(3250)	(3234)	(3604)	(3557)	(3305)	(3262)	(3250)	(3020)	(3315)	

NOTE: Level of significance of difference between the two most recent classes: s = .05, ss = 0.01, sss = .001.

a. Answer alternatives were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar.

Source: Johnston, et al. (in press).

Table 5. Summary of study findings on effectiveness of prevention programs

PROGRAM TYPE	INVESTIGATORS	FINDINGS
Targeted		
Primary prevention	McAlister et al. 1980.	Peer-resistance training found to prevent initiation of tobacco, alcohol, and marijuana use by junior high school students.
	Evans et al. 1981.	Peer-resistance training found to prevent initiation of tobacco use by adolescents.
	Botvin et al. 1983, 1984.	Life-skills training, involving training in personal and interpersonal skills as well as peer resistance, reduced use of tobacco and marijuana up to 1 year after training for fourth to eighth grades.
	Perry et al. 1983.	Use of both teachers and peers employing peer-resistance, health education, and social skills training led to reduction in smoking with high school students.
	Schinke and Gilchrist 1983, 1985.	Skills enhancement, emphasizing peer resistance, reduced tobacco use and intention to use.
Early intervention	Kumpfer and DeMarsh 1983; DeMarsh and Kumpfer 1986.	Skills training program for children of drug abuse clients and their parents led to improved family communication, diminished problems in children, and reduced intention to use alcohol or tobacco.

	Spivak and Shure 1982; Bry 1982; Shure and Spivak 1983.	Skills training in interpersonal skills at fourth and fifth grades decreases impulsiveness and delinquency and increases interpersonal effectiveness.
	Hawkins et al. 1988.	Classroom management program using teachers to teach skills in interpersonal behavior and self-control in the classroom setting to low achievers led to improved school-related behaviors, attitudes.
Large-scale		
Media	Hanneman et al. 1977, 1978.	Media campaign plus community mobilization led to greatest behavioral change when target was prescription drug use by women.
	Flay and Sobel 1985.	Coordinating classroom and home/family assignments with television programming led to lessened initiation of smoking by junior high school students.
Communitywide	Berrueta-Clement et al. 1983, 1984.	Skills-training program for preschool youth and parents led to lower rates of antisocial behavior and greater academic success than was shown by a control group in late adolescence.

Communitywide culturally sensitive	Gilchrist et al. 1987.	Skills-training program for adolescent American Indian youth led to lower rates of alcohol, marijuana, and inhalant use for experimental groups than for control groups.

Table 6. Summary of study findings on risk factors and correlates to alcohol and other drug use

FACTORS	INVESTIGATORS	FINDINGS
Genetic and family		
Parental AOD use	Cotton 1979; Vaillant 1983; Goodwin 1971, 1985; Goodwin et al. 1973; Goodwin et al. 1974; Barnes et al 1986.	Heightened susceptibility to alcoholism in children with alcoholic parents.
	Johnson et al. 1986.	Heightened susceptibility to nonalcohol drug abuse in children of alcoholics.
	Kandel et al. 1978; Kandel 1982; Kim 1979; G.M. Johnson et al. 1984.	Parental drug use associated with initiation of drug use by children.
	Rachal et al. 1982; Zucker 1979.	Frequency of children's AOD use associated with parental use.
	Thorne and DeBlassie 1985.	Parental use of illicit drugs associated with AOD use in children.
Parental discord	Baumrind 1983; Penning and Barnes 1982; Robins 1980.	Parental divorce and separation associated with drug-using and delinquent behaviors.
	Simcha-Fagan and Gersten 1986.	Parental conflict associated with drug abuse.
	Wolin et al. 1979, 1980; Bennett and Wolin 1985	Family rituals more largely absent in homes of AOD abusers.
Parental supervision	Kumpfer and DeMarsh 1986; Kumpfer 1987.	Disorganization, home/family management skills less evident in homes of AOD abusers, less time with children, less evidence of support.

	Dishion et al. 1985; Patterson and Dishion 1985.	Less monitoring and parental involvement in homes of alcohol abusers.
	Vaillant and Milofsky 1982.	More family moves, lower cohesion in families of AOD abusers.
	Bachman et al. 1981.	AOD use strongly correlated with number of evenings per week outside the home.
Genetic	Schuckit et al. 1972.	Half-siblings of alcoholic parent or parents disproportionately alcoholic.
	Kaij 1960.	Rates of alcoholism higher in monozygotic twins (71.4 percent) than in dizygotic (32.3 percent).
	Gurling et al. 1981.	Alcoholism concordance rates higher in male twins (33 percent monozygotic, 30 percent dizygotic) than in female twins (8 percent) monozygotic, 13 percent dizygotic).
	Loehlin 1972.	Greater concordance for heavy drinking in monozygotic than dizygotic twins.
	Pickens and Svikis 1986.	Nonalcoholic drug abuse concordance rates in male twins: monozygotic, 55 percent; dizygotic, 31 percent. In female twins: monozygotic, 27 percent; dizygotic, 23 percent.
	Jonnsson and Nilsson 1968.	Greater concordance for quantity of alcohol regularly consumed for monozygotic than dizygotic twins.

	Partanen et al. 1966.	No differences in alcoholism concordance rates between monozygotic and dizygotic twins for uncontrolled drinking; differences for quantity consumed.
	Cadoret and Grath 1978; Cadoret et al. 1980.	Adoptees with alcoholic biological parents have greater tendency to alcohol abuse.
	Cloninger et al. 1981.	Children without alcoholic biological parents raised in alcoholic adoptive families showed no tendency to alcohol abuse.
	Bohman et al. 1981.	Adopted sons and daughters with biological parents who were alcoholics were more likely to become alcoholic than adoptees without family histories of alcoholism.
Peer		
Drug use and delinquent behavior	Kandel 1978, 1985.	Peers' attitudes toward drug use and use of drugs related to adolescents' own use.
	Robins and Ratcliff 1979; Jessor and Jessor 1978.	Beliefs about drug use by peers and orientation to peers associated with own use.
	Johnston et al. in press; Elliott et al. 1985; Jessor et al. 1980; Kaplan et al. 1982; Norem-Hebeisen et al. 1984; O'Donnell and Clayton 1979.	Associations with drug-using peers associated with own use.

Psychological		
Temperament	Zuckerman 1979; Penning and Barnes 1982; Spotts and Shontz 1984.	Sensation-seeking related to marijuana use and to number of drugs used in adolescence.
	Ahmed et al. 1984.	Risk taking by child associated with expectations to use and later use of tobacco and alcohol.
	Tarter et al. 1985.	Decreased attention span associated with alcoholism.
	Rosenberg 1969.	Decreased ability to return to emotional homeostasis in alcoholic.
	Cantwell 1972; Morrison and Stewart 1973.	Hyperactivity in children with alcoholic parent(s).
	Goodwin et al. 1975.	Emotional lability and hypersensitivity associated with alcoholism.
	Aronson and Gilbert 1963.	Depression, low frustration tolerance and emotional immaturity in sons of alcoholic fathers.
Deviance	Wechsler and Thum 1973; Johnston et al. 1978; Kandel et al. 1978; Robins 1978; Elliott et al. 1985.	Early antisocial behavior associated with later adolescent drug use.
	Bachman et al. 1981.	Rebelliousness associated with later drug use.
	Kellam and Brown 1982.	Early (first-grade) aggressiveness in males, particularly in combination with shyness, associated with adolescent drug use.
	Kandel 1982; Kaplan et al. 1986; Robins and Przbeck 1985.	Early use of drugs associated with later regular use.

	Brunswick and Boyle 1979; Kleinman 1978; O'Donnell and Clayton 1979.	Early use of drugs associated with later criminal activity.
School behaviors	Kumpfer and DeMarsh 1986.	Alienation from school, school peers, and decreased attendance associated with later AOD abuse.
	Anhalt and Klein 1976; Johnston 1973; Robins 1980; Annis and Watson 1975.	School dropout related to adolescent drug use.
	Catalano et al. 1985; Johnston et al. 1986.	Low commitment to school associated with AOD abuse and delinquency.
	Herjanic et al. 1977; Rimmer 1982.	Academic problems and behavioral difficulties in early grades associated with drug use.
	Holmberg 1985.	Tardiness and truancy associated with later drug use.
	Johnston et al. 1985.	Plans to attend college associated with lower levels of drug use.
	Bachman et al. 1981; Brooks et al. 1977; Kandel 1982; Kim 1979.	Absenteeism, cutting class, and poor performance associated with drug abuse.
	Jessor and Jessor 1977; Johnston 1973; Kandel et al. 1978.	Low academic performance in early grades associated with initiation of drug use.
	Friedman 1983; Johnston and Bachman 1980.	Attitude toward school and time spent on homework associated with drug use.

	Smith and Fogg 1978, 1979.	School failure associated with subsequent use and level of use.
	Spivak 1983.	Aggressive, antisocial behavior in early grades associated with later delinquency and drug use
Biological		
Neurological-cognitive	Propping et al. 1980, 1981; Pollock et al. 1983.	Deficiency in alpha slow wave capacity distinguished children of alcoholics from others.
	Sowder and Burt 1980.	Lower IQ, greater behavioral problems in children of heroin-using mothers.
	Schuckit and Bernstein 1981.	Less time sleeping by children of alcoholics.
	Begleiter et al. 1984; Porjesz and Begleiter 1985.	Differences between sons of alcoholic fathers and matched ones in evoked potentials findings.
	Bloom et al. 1982; O'Connor and Hesselbrock 1985.	Differences in evoked potentials in sons of alcoholic fathers after administration of alcohol.
	Gabrielli and Mednick 1983.	Lower verbal ability and IQ associated with family history of alcoholism.
	Noll and Zucker 1983.	Lower abstraction concept-forming abilities associated with family history of alcoholism.
Neuroendocrine	Goodwin 1985; Kent et al. in press.	Differences in serotonin levels in children of alcoholics compared to others.

	Schuckit 1983.	Lower levels of dopamine associated with family history of alcoholism.
	Schuckit et al. 1983.	Higher levels of prolactin after alcohol consumption in sons of alcoholics than in sons of nonalcoholics.
Metabolism of AODs	Schuckit et al. 1981.	Decreased muscle tension consequent to alcohol consumption for males with family histories of alcoholism.
	Schuckit 1980.	Lower report of intoxication by sons with family histories of alcoholism than other males at same alcohol blood levels.
	Schuckit 1985.	Decreased static ataxia in males with family histories of alcoholism.
	Wilson 1982.	Differences in psychomotor functioning after alcohol ingestion between sons of alcoholics and males without family histories of alcoholism.
Community		
Deprivation	Schlossman et al. 1984; McCord and McCord 1959.	Community disorganization related to higher levels of delinquency.
	Blumstein et al. 1985; Farrington 1985; Robins 1979; West and Farrington 1973.	Poverty, inadequate housing, and living conditions associated with delinquency and drug use.
Neighborhood involvement	Catalano et al. 1985.	Residential stability associated with lower rates of initiating drugs and lower frequency of drug use.

	Kaplan et al. 1984.	More mobile adolescents felt more alienated from family and school and were more likely to have friends using drugs.
	Sampson et al. 1981.	Delinquency and crime associated with low stability of neighborhood population.
Religious commitment	Bachman et al. 1981; Johnston and Bachman 1980.	Adolescents attending religious services more frequently and rating religion important in their lives less likely to use any substance.

Appendixes

Appendix A
Draft Checklist from
Karol Kumpfer, Ph.D.

Alta Institute Drug Abuse Vulnerability Risk Assessment: Male Version

(Note: This screening instrument has been developed by Dr. Karol Kumpfer for research purposes and has not yet been checked for reliability and validity. It should not be used without the permission of the author.)

Name of the Child Being Rated:
Age of Child:
Relationship of Person Doing the Rating:

Instructions: Please rate the boy on the following statements about risk and protective factors for substance abuse. If the statement is very true for this youth, then place the maximum number of points (indicated in the brackets after the space), but if the statement is only partially true, reduce the number of points according to the degree the statement is true. If the statement is not true, put a zero in the blank. If you are not the parent, you may not have all the information you need to answer the questions. An interview with a parent/caretaker and the youth prior to this assessment will improve the accuracy of this assessment.

When you have finished the assessment, add all the risk factors and subtract all the protective factors to get the total score. The higher the score, the greater the risk of problems with alcohol or other drugs. This does not mean that the child will definitely become a substance abuser, merely that he has a high risk and may carry the disease of alcoholism or substance abuse. Education concerning his increased risk for substance abuse, should he choose to use alcohol or drugs, may help to decrease this probability. Special help in those areas where problems occur will also increase his chances of leading a happy and productive life. In addition, a low score will not insure that the child will not become a substance abuser because major losses, stressors, or disappointments later in life can lead to substance abuse. However, a low score generally indicates a lower risk.

Correspondence regarding this checklist should be addressed to Karol L. Kumpfer, Ph.D., Associate Research Professor, Graduate School of Social Work, Social Work Building, Salt Lake City, UT 84112.

Genetic Risk Factors:

☐ (2) 1. This child is primarily of Northern European ancestry and is adopted, but the alcohol or drug history of the parents is unknown.

☐ (5) 2. Biological father of this child developed a problem with alcohol or drugs before 15 years of age and had antisocial/delinquency problems.

☐ (2) 3. The biological father of this child developed problems with alcohol and drugs later than 15 years of age and did not have problems with the law or antisocial behaviors.

☐ (#) 4. The number of biological male grandparents or uncles of this child who ever had a problem with alcohol or drugs (including prescription mind-altering drugs) and antisocial behaviors.

☐ (3) 5. The biological mother of this child has had alcohol or drug problems (including prescription medication abuse or overuse), an eating disorder, or Briquet's Syndrome (many physical complaints).

☐ (3) 6. This child is primary of Northern European ancestry.

☐ (5) 7. This child is primarily of Native American or Eskimo ancestry.

____TOTAL GENETIC RISK FACTORS

Genetic Protective Factors:

☐ (-4) 1. This child is primarily of Asian parental heritage.

☐ (-5) 2. This child's biological parents were occasional social drinkers (no more than one or two drinks, no more often than once or twice a week).

☐ (-4) 3. This child's biological parents do not appear to suffer from any diagnosable psychiatric illness (depression, bipolar affective illness, antisocial personality, Briquet's Syndrome).

____TOTAL GENETIC PROTECTIVE FACTORS

____GRAND TOTAL GENETIC RISK MINUS PROTECTIVE FACTORS

In Utero Risk Factors:

☐ (3) 1. This child's mother smoked heavily during the pregnancy.

☐ (3) 2. This child's mother drank heavily during the entire pregnancy.

☐ (3) 3. This child's mother used amphetamines, diet pills (even if prescribed by a physician), cocaine, or any type of "speed" heavily during the pregnancy.

____TOTAL IN UTERO RISK FACTORS

In Utero Protective Factors:

☐ (-3) 1. This child's mother had regular prenatal care during her pregnancy.

☐ (-3) 2. This child's mother avoided all alcohol during the pregnancy.

☐ (-3) 3. This child's mother did not smoke or use any form of speed (tobacco, diet pills, cocaine, amphetamines) during the pregnancy.

☐ (-3) 4. This child's mother was careful to eat and sleep well and stay healthy during the pregnancy.

____TOTAL IN UTERO PROTECTIVE FACTORS

____GRAND TOTAL IN UTERO RISK MINUS PROTECTIVE FACTORS

Basic Temperament or Personality Risk Factors:

☐ (2) 1. This child has had a difficult temperament since early in life.

☐ (2) 2. This child has a high activity level.

☐ (2) 3. This child has always been emotionally sensitive.

Complete this section only for children 6 to 8 years of age:

☐ (2) 4. This child is noncompliant and difficult to control.

☐ (2) 5. This child is fearful, anxious, and sensitive.

☐ (1) 6. This child has temper tantrums.

☐ (1) 7. This child is strong willed.

☐ (2) 8. This child is having more trouble than his schoolmates learning to read and spell.

Complete this section only for children 9 to 12 years of age:

☐ (4) 4. This child is aggressive, hurtful, and will not obey his parents/caretakers.

☐ (2) 5. This child is socially isolated and anxious in social situations.

☐ (3) 6. This child is a thrill seeker in nonproductive or dangerous ways.

☐ (4) 7. This child appears to have no sense of right or wrong and purposefully lies and/or steals.

☐ (4) 8. This child is failing in reading and spelling.

Complete this section only for children 13 years of age and above:

☐ (4) 4. This youth is aggressive and often gets into fights.

☐ (5) 5. This youth has few friends except those who are drug users and dropouts from society and school.

☐ (4) 6. This youth is unconventional and does not follow traditional values or authority.

☐ (5) 7. This youth is often in trouble with the law, school officials, and his parents.

☐ (5) 8. This youth is failing in school, has been suspended, or has dropped out of school because of failing academically.

_____TOTAL TEMPERAMENT/PERSONALITY RISK FACTORS

Temperament / Personality Protective Factors:

☐ (-4) 1. This child has high intelligence.

☐ (-4) 2. This child has good verbal skills.

☐ (-4) 3. This child has excellent problem-solving skills and is flexible in his thinking.

☐ (-3) 4. This child is attractive.

☐ (-4) 5. This child has good social skills.

☐ (-4) 6. This child is motivated to succeed and has the personal style and skills to make it.

☐ (-4) 7. This child has a very stable personality.

☐ (-4) 8. This child is very healthy and rarely gets sick.

☐ (-4) 9. This child is eager to please his parents and teachers.

_____TOTAL TEMPERAMENT/PERSONALITY PROTECTIVE FACTORS

_____GRAND TOTAL TEMPERAMENT/PERSONALITY RISK MINUS PROTECTIVE FACTORS

Environmental Risk Factors: The Home:

☐ (3) 1. This child was not planned nor wanted by his mother.

☐ (5) 2. This child's mother/caretaker had an alcohol, drug abuse, depression, or other problem that interfered with the care of this child.

☐ (3) 3. The parents of this child had very high expectations for this child's performance.

☐ (3) 4. The parental discipline of this child was overly strict or lax.

☐ (2) 5. This child has a lot of unsupervised time.

☐ (2) 6. This child was not really nurtured or taught personal values or life skills by his parents/caretakers.

☐ (4) 7. The family's communications included a lot of "put-downs" and conflict.

☐ (4) 8. This child's parents/caretakers lacked parenting skills to skillfully handle noncompliance in this child.

☐ (4) 9. This child was physically or verbally abused.

☐ (4) 10. This child was sexually abused.

☐ (2) 11. This child's parents/caretakers openly used/use alcohol, illegal drugs, or prescription mind-altering drugs to excess in front of this child.

☐ (5) 12. This child's parents/caretakers gave to or allowed this child to use alcohol, illegal, or prescription mind-altering drugs regularly.

_____TOTAL EARLY HOME RISK FACTORS

Early Home Protective Factors:

☐ (-4) 1. This child has family members who are supportive and caring.

☐ (-4) 2. This child has extended family members or family friends with whom he is close.

☐ (-4) 3. This child likes his parents.

☐ (-4) 4. This child receives regular praise for progress in his development and education.

☐ (-4) 5. This child's parents use democratic and skillful discipline techniques.

☐ (-4) 6. The family's communication style is characterized by politeness, support, and caring for the other members.

☐ (-4) 7. This child has a close confidant in the home.

☐ (-4) 8. The family has regular daily routines and family rituals that are rarely disrupted.

☐ (-5) 9. The parents have a happy marriage and rarely fight.

☐ (-3) 10. This child has clear roles and responsibilities in the home (jobs to do).

____TOTAL EARLY HOME PROTECTIVE FACTORS

____GRAND TOTAL EARLY HOME RISK MINUS PROTECTIVE FACTORS

School Risk Factors:

☐ (2) 1. This child dislikes school.

☐ (2) 2. This child has few friends at school.

☐ (2) 3. This child is not active in extracurricular activities.

☐ (2) 4. This child has poor academic achievement.

☐ (2) 5. This child is often willfully absent from school.

☐ (3) 6. This child is in a resource classroom for behaviorally disordered children.

☐ (1) 7. The classrooms are overcrowded (35 or more children per teacher).

☐ (1) 8. The teacher and school morale is low.

☐ (4) 9. This child misbehaves in school.

☐ (4) 10. Alcohol and drugs are readily available at school.

____TOTAL SCHOOL RISK FACTORS

School Protective Factors:

☐ (-3) 1. An effective course of alcohol and drug education is available in the school (10 or more sessions per year).

☐ (-3) 2. The school has a clear policy of alcohol and drug nonuse at school and an effective discipline policy.

☐ (-3) 3. The leaders (staff and students) in the school promote a non-drug-use atmosphere.

☐ (-3) 4. Parents or siblings tutor this child in academic areas where he is having problems and help with homework.

☐ (-5) 5. This child is superior in his achievement in school.

☐ (-4) 6. This child is very motivated to do well in school.

☐ (-3) 7. This child is active in extracurricular activities.

☐ (-3) 8. This child likes school.

☐ (-5) 9. This child currently has adults at school who have taken a special interest in him and his talents.

_____TOTAL SCHOOL PROTECTIVE FACTORS

_____GRAND TOTAL SCHOOL RISK MINUS PROTECTIVE FACTORS

Peer Risk Factors:

☐ (4) 1. This child's friends regularly smoke tobacco.

☐ (5) 2. This child's friends regularly smoke marijuana.

☐ (5) 3. This child's friends regularly use alcohol.

☐ (5) 4. This child's friends regularly use a variety of illegal drugs.

☐ (3) 5. This child's friends believe it is okay to smoke tobacco, use alcohol, and use illegal drugs.

☐ (4) 6. This child's friends are thrill seekers in destructive or dangerous ways.

☐ (5) 7. This youth's friends are independent and rebellious youth.

☐ (5) 8. This youth's friends are often in trouble with the law.

_____TOTAL PEER RISK FACTORS

Peer Protective Factors:

☐ (-3) 1. The majority of this child's friends do not believe it is okay to use tobacco, alcohol, or drugs.

☐ (-3) 2. The majority of this child's friends do not use tobacco, alcohol, or drugs.

☐ (-3) 3. The majority of this child's friends are basically good kids, are doing well academically, and have no problems with the law.

☐ (-3) 4. This child has a number of groups of peers in the community with whom he is involved.

____TOTAL PEER PROTECTIVE FACTORS

____GRAND TOTAL PEER RISK MINUS PROTECTIVE FACTORS

Community Risk Factors:

☐ (2) 1. This child lives in a community that condones or accepts heavy alcohol use by its members.

☐ (2) 2. This child lives in a community that condones or accepts the use of illegal drugs or prescription drugs used nonmedically.

☐ (2) 3. This child lives in a community that has a lot of community disorganization and disruption.

☐ (2) 4. The community has few recreational, social, or cultural bonding opportunities for this youth.

☐ (2) 5. This child has had little opportunity to bond to a community because of frequent moves.

☐ (2) 6. This child's community has little economic opportunity for this type of youth.

____TOTAL COMMUNITY RISK FACTORS

Protective Community Factors:

☐ (-5) 1. This child and his family are active in a church or religious organization.

☐ (-4) 2. This child's family is active in a number of civic, social, cultural, educational, or service groups in the community.

☐ (-4) 3. This child is actively involved in a number of clubs, classes, or groups in the community.

☐ (-4) 4. The community has a clear message that drug or excessive alcohol use is unhealthy and unwise.

☐ (-5) 5. Access to alcohol and illegal drugs is restricted for both youth and adults in this community.

____TOTAL PROTECTIVE COMMUNITY FACTORS

____GRAND TOTAL COMMUNITY RISK MINUS PROTECTIVE FACTORS

Child's High-Risk Behaviors:

☐ (5) 1. This child smokes tobacco as much as he can.

☐ (7) 2. This child sneaks drinks or bottles from the parents or other sources and drinks as much as he can whenever alcohol is available to him.

☐ (7) 3. This child appears to want prescription medication more than is needed and will take more than prescribed whenever he can.

☐ (7) 4. This child sneaks marijuana and other drugs from the parents or other sources and uses as much as he can whenever available to him.

☐ (7) 5. This child is completely noncompliant, rebellious, and often in trouble at school, and he engages in delinquent behavior.

☐ (5) 6. This child is sexually active and promiscuous.

☐ (7) 7. This child says that alcohol, tobacco, or drugs help him to relax and make him feel better.

☐ (7) 8. This child says that he needs to use alcohol, tobacco, or drugs to have a good time and be social.

☐ (7) 9. This child deals drugs to make money.

_____TOTAL HIGH-RISK BEHAVIORS

Protective Factors Related to High-Risk Behaviors:

☐ (-5) 1. When this child has tasted or tried alcohol, he has not liked the effect.

☐ (-4) 2. When this child has tried smoking tobacco, he has not liked the effect.

☐ (-5) 3. When this child has tried other drugs, he has not liked the effect.

☐ (-5) 4. This child has been educated by his parents about sex and appropriate sexual behaviors consistent with his age.

☐ (-5) 5. This child has been educated by his parents about alcohol and drugs in a manner appropriate for his age.

☐ (-5) 6. This child has been educated by his parents in wrong behaviors and the consequences of wrong or illegal behaviors.

_____TOTAL HIGH-RISK BEHAVIOR PROTECTIVE FACTORS

____GRAND TOTAL HIGH-RISK BEHAVIORS MINUS PROTECTIVE FACTORS

Final Risk for Substance Abuse Score:

Now total up all the grand totals here and sum to the final total. Remember that this assessment is merely suggestive of vulnerability and areas for corrective action. It is accurate only to the degree that all of this information is known and accurate. In addition, it is possible that there are other risk or protective factors that are not currently known by researchers in this field and that they are not included. If you are concerned about the score for this child, you may wish to contact professionals in the field for a more thorough assessment.

____TOTAL GENETIC SCORE

____TOTAL IN UTERO SCORE

____TOTAL TEMPERAMENT/PERSONALITY SCORE

____TOTAL HOME ENVIRONMENT SCORE

____TOTAL SCHOOL SCORE

____TOTAL PEER SCORE

____TOTAL COMMUNITY SCORE

____TOTAL HIGH-RISK BEHAVIOR SCORE

____TOTAL RISK SCORE FOR SUBSTANCE ABUSE

*Note: This assessment scale is in the developmental phase and should not be used without permission of the author, Dr. Karol Kumpfer.

Appendix B
Draft Checklist From Gene Smith, Ph.D.

The format, content, and instructions for use of any risk list concerning substance abuse should be guided by a knowledge of whose risk is being assessed and who is performing the assessment. We probably need several risk lists, rather than one.

Populations that might need different risk lists are ones differing in age (e.g., 13- versus 20-year-olds); groups with dramatically different levels and patterns of current substance use; and, perhaps, groups that differ extensively in cultural background and/or economic status.

Specific features of any risk list should take account of who is expected to use it: parents, teachers, health professionals, the substance users or potential users themselves, etc.

Later we can decide how many risk lists should be developed, and which risk items belong on which risk lists. For now, it seems desirable to identify risks in an overinclusive fashion, despite the redundancy invited by that approach.

Risks of substance use, and barriers to substance use, are often opposite sides of the same coin. Most items specified below are risks; some are barriers. The status of others will depend on the format of their presentation. Readers familiar with the literature will know which are which. Later we can make the distinctions explicit.

Correspondence regarding this checklist should be addressed to Gene M. Smith, Ph.D., Rt. 2, Box 145, Yellville, AR 72687.

Although what follows is cumbersome, some organization and structure is provided by classifying risk items (and barriers) as follows:

A. PERSONAL CHARACTERISTICS:

  1. Personality:

    a. disobedient and rebellious

    b. irresponsible

    c. often lies and cheats

    d. is tough and hard, rather than considerate and tender

- e. is excitable, high-strung, often gets upset, and is easily angered
- f. dislikes school, has difficulty concentrating, and dislikes hard thinking
- g. has little intellectual curiosity and little confidence academically
- h. has ineffective work and study habits
- i. not organized and orderly
- j. not determined, persistent, or motivated to achieve
- k. has low self-confidence, feels inadequate and incapable
- l. is pessimistic
- m. thinks his/her fate is controlled by external circumstances rather than self
- n. feels unvalued and unaccepted
- o. is extroverted
- p. is adventuresome and thrill-seeking, enjoys risk-taking
- q. seeks novel and unusual experiences

2. Attitudes toward . . .
   - a. substance use:
     - (1) cigarette use; cigarette smokers
     - (2) alcohol use; "social" drinkers; alcoholics
     - (3) marijuana use; occasional marijuana users; daily users
     - (4) same items for cocaine, heroin, PCP, LSD, amphetamines, hypnotics, and tranquilizers as for marijuana
     - (5) perceived effects of each substance on negative feelings such as frustration, boredom, depression, anxiety, and guilt; on pleasure, fun, and enjoyment; on social relations; on mental and physical performance; on self-confidence; and on self-control
   - b. parents: degree of alienation versus bonding

(1) propensity not to bring friends home to meet parents

(2) frequency of church attendance

(3) attraction to hard rock music and other forms of entertainment that glamorize and glorify drug use

(4) displaying mottoes on clothing and elsewhere that have messages favorable to drug use

B. CHARACTERISTICS OF PEERS:

1. Extent and patterns of drug use
2. Involvement in criminal, delinquent, or other actions deemed undesirable by adult authorities

C. CHARACTERISTICS OF PARENTS:

1. One or both parents use alcohol and other drugs frequently in the presence of young family members but appear not to be addicted and seem to handle job and other responsibilities satisfactorily—at least for the time being.
2. One or both parents (or other close family members) have a past history of alcoholism and/or drug addiction, or are currently addicted.

Empirical support for the predictive validity of some of the items listed above is substantial. In other instances, support is more tentative. At the outset, it might be advantageous to include all potentially useful risk items—even ones with only theoretical or "common sense" support. Each member of the task force should be encouraged to recommend additional items, to prune, and to set priorities. Later we might want to establish a formal rating procedure for identifying "the most important" items.

There are two types of redundancy that will occur in any list we develop: items that are highly correlated and might or might not have obvious semantic similarities; and items with minimal correlation and/or semantic overlap which, however, have multivariate redundancy because they relate similarly to an important latent variable. Redundancy of the second type can be revealed by appropriate multivariate analytic procedures.

With the time and resources presently available, we cannot go far toward eliminating either type of redundancy; but that might not be a serious problem if we don't count individual risks to produce a total score. The danger in constructing such totals is that the "same" risk is likely to be counted more than once.

At some point we should specify the reasons for developing the risk lists and discuss their possible benefits; e.g., to help parents, teachers, users, and potential users recognize signs of oncoming initiation or escalation of use that might otherwise be dismissed as inconsequential. Perhaps each member of our group should be asked to discuss the possible benefits of producing such lists, the hazards such lists might pose, and ways of avoiding those pitfalls.

Appendix C
Risk Check For Your Child

Source: Hawkins et al. (1988a.)

What's the risk that your child will abuse drugs? Complete this risk check to find out. Different children in the same family can have a different risk for drug abuse, so complete the check for each of your children. Place each child's initial in a column at the left and check the appropriate columns for each risk factor that applies.

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Child's Initials

____ ____ 1. Family history of alcoholism. If the biological father of a boy is an alcoholic, put down a point for that boy.

____ ____ 2. Early problem behavior. Add a point for boys who were aggressive and difficult to control when they were five, six, or seven.

____ ____ 3. Family patterns. Give a point for each of the following that happens in your family:

____ ____ Your children don't share their thoughts and feelings regularly with at least one family member.

____ ____ You rarely let your child know in advance what kind of behavior you expect.

____ ____ You don't usually keep track of where your child is, the kinds of things your child is doing, and who your child's friends are.

____ ____ You rarely praise your children for doing well.

____ ____ When your child breaks family rules, you're not consistent and controlled in your punishment.

____ ____ 4. Family drug use. Add a point if household members use illegal drugs around the children, if there is heavy recreational drinking in the home, or if adults in the family involve children in their drinking or other drug use, such as asking a child to get a beer or light a cigarette.

___ ___ 5. Peer school performance. Put down a point for each child who failed to achieve in school when that child was nine, ten, and eleven.

___ ___ 6. Dislike of school. Add a point for children who strongly dislike school or have a poor attendance record.

___ ___ 7. Alienation from family and society. If your children have become isolated from the family and cynical about their own involvement in family and school activities, add another point.

___ ___ 8. Delinquent behavior/school misbehavior. Add a point if your child is involved in delinquent behavior or has been suspended or expelled for school misbehavior.

___ ___ 9. Friends who use drugs. Add another point for each child whose close friends use alcohol or other drugs.

___ ___ 10. Favorable attitudes toward drug use. Add a point for each child who expresses the view that it's okay for children to use alcohol or other drugs.

___ ___ 11. Early first use. Finally, if any children in your family began to use alcohol, marijuana, or other illegal drugs before they were fifteen, add points to that child's total. To calculate the number of points to add, subtract the child's age at first drug use from 15 and add the result to your child's total.

After you've checked the appropriate columns, total the number of points for each child. The higher the number, the greater the risk of problems with alcohol or other drugs. But remember, this is not a scientific assessment of your family. These are only statistical probabilities. The presence of many risk factors doesn't condemn your children to be drug abusers, nor does a low score mean they will be free of problems. This risk check is intended simply to alert you to pay attention to these factors, and to make the extra effort needed to change patterns where necessary.

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